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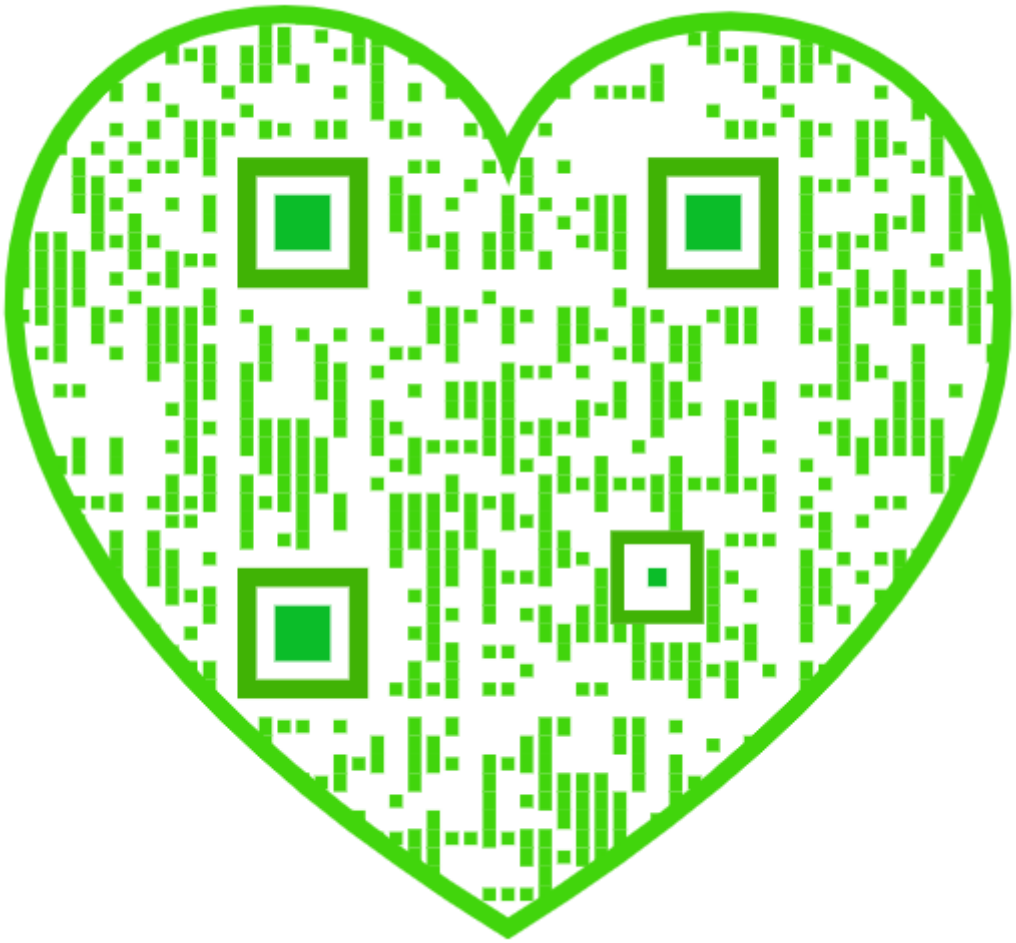
PRACTICAL SHEEP HUSBANDRY

WM. A. BURNS



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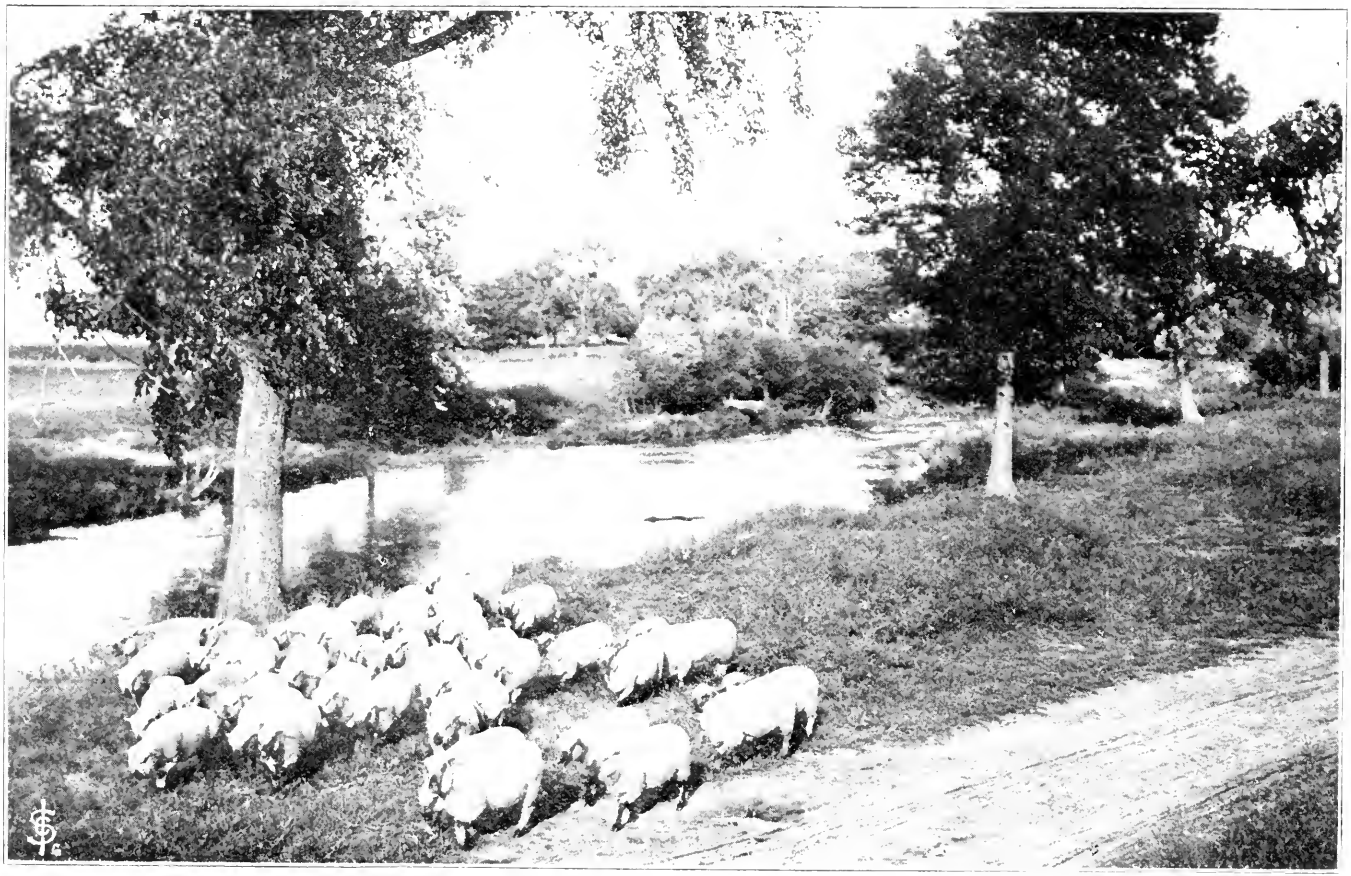

"The Golden Hoofed Animal"

Practical Sheep Husbandry

By

Wm. A. Burns

A COMPREHENSIVE TREATISE

OF

PRACTICAL METHODS FOR PRODUCING, FEEDING AND FATTENING SHEEP AND LAMBS FOR MARKET

Price $1.00

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"Let him learn a prudence of a higher strain. Let him learn that everything in Nature, even motes and feathers, go by law and not by luck, and that what he sows he reaps."

—Emerson.

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PREFACE

WE have in this country today a few good breeders of sheep, and their work has been good; and although more of their kind are needed and better breeding needs to be encouraged, I find my attention drawn to the commercial and farm flock.

During the early winter of 1918, I was introduced to one of Illinois' best cattle feeders. We talked sheep and the sheep business a little while, and as I walked away I heard him say to his commission man: "Why didn't you teach me the sheep business? I know that I would like sheep; I need them on my farm and have always wanted to handle them, but I don't want to try raising or feeding them and fail at it, as so many of my neighbors have done." This statement, by a successful cattle feeder, set me to thinking of the great need for information and education of the right sort regarding sheep, and resulted in my decision to offer this little book on the subject. I wish it understood, however, that I am not offering this as a complete work on sheep or sheep feeding, and that my principal object is to point out to the honest seeker after some practical information, the kind of animal he is doing business with, and the methods necessary to insure success.

I will try to show in this little volume how the farm flock can be kept at a profit; how to care for, fatten and feed sheep and lambs for the market; what the market demands are; and, if possible, create a greater demand for mutton and lamb by offering some excellent recipes for preparing and serving this food.

The product offered on the market, only too plainly shows lack of information on the part of the men who are trying to handle sheep. It has been well said that a chain is only as strong as its weakest link, and so while the producer has been schooled along certain lines, he has failed, because one especial fundamental has not been thoroughly pointed out to him, namely, the real nature of sheep.

Nature has given to every living thing in the animal kingdom, some means of defense or protection. The sheep, in a prehistorical period, may have been fleet of foot, and with its horns was amply able to take good care of itself among the beasts of prey. The sheep of today is in reality a product of man's ingenuity. This animal has been, through domestication, schooled entirely away from his native state, and is a helpless thing but for man's protecting arm. The American farmer needs to know, when he turns his sheep out to rustle for themselves,

that they will be just as good as the man who cares for them, no better and no worse.

We are just what education and breeding have made us, whether that education has been false or true. Both of the following examples tend to show when and how some of our most noble animals were *originally* created; and what breeding and education will accomplish:

One of the noblest animals which we possess is the Newfoundland dog, which was produced by crossing the Eskimo dog with a French Hound; likewise the English thoroughbred of today is the result of crossing an Arabian stallion with an ordinary English mare, although, of course, especially selected.

The mistakes that have been made in the sheep business should not discourage any one desirous of going into it, and the fact that I bring some of these errors to the surface, should not alarm the reader; because, as a certain great writer has well said, "Error discovered is two-thirds destroyed."

Authorities Consulted

It will be my intention to keep all prejudice and biased opinions well out of my mind. I have consulted the best authorities, and wish to express my appreciation to Mr. F. R. Marshall of the Department of Animal Industry at Washington, and Prof. W. C. Coffey of the University of Illinois, both of whom have furnished considerable data, some of the feeding formulas and considerable important information; also to Mr. E. W. Baker, of the U. S. Bureau of Markets at Chicago, who has lent a very helping hand, and to the American Sheep Breeder and Wool Grower, U. S. Yards, Chicago, which has been very kind in furnishing and helping to arrange the various cuts and pictures through the book.

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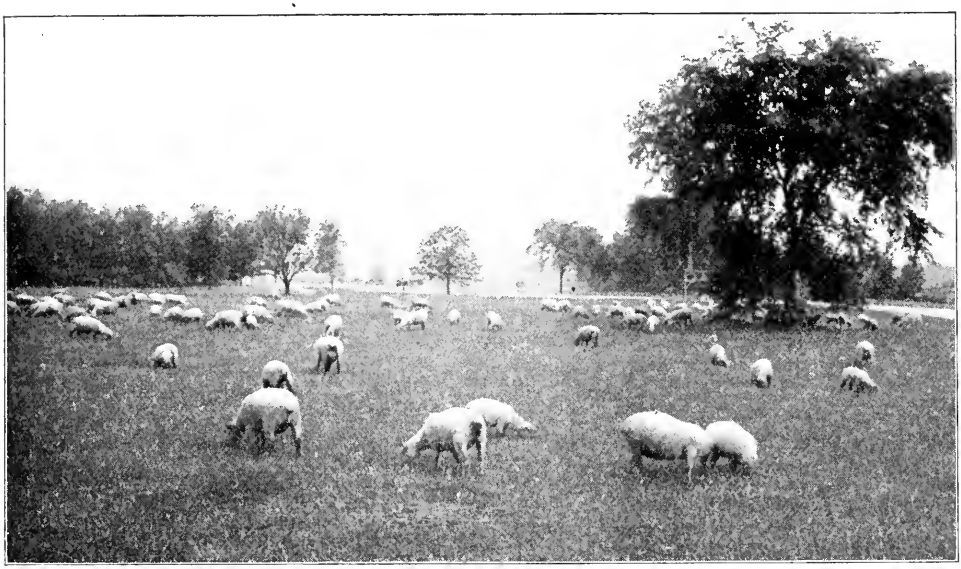
CHAPTER I

THE SHEEP; ITS HISTORY, BREEDING; AND PROBLEMS OF PRODUCTION

History of Sheep

"SHEEP," Webster says, "are among the most useful animals that the Creator has bestowed on man, as its wool constitutes a principal material of warm clothing, and its flesh is a great article of food. The sheep is remarkable for its harmless temper and its timidity. The varieties are numerous."



They Have Turned This Once Wild and Weedy Pasture Into Blue Grass

There is evidence that sheep were under domestication through eastern countries in prehistoric times, for their bones have been found in caves and lake dwellings, where the people of those countries then lived. Rome developed a great deal of skill in handling her flocks, and sheep abounded in Spain prior to the Christian era. It is the first animal spoken of in the Bible, and we find the following, as well as many other records, showing that in early history sheep were domesticated, and that men were then using their flesh for food and their wool for clothing:

Genesis 4:2, "Abel was a keeper of sheep, but Cain was a tiller of the ground."

Samuel 25:18, "Then Abigail took five sheep ready dressed," etc.

Leviticus 13:47, "Whether it be a woolen garment or a linen garment."

Genesis 31:19, "and Laben went to shear his sheep."

It is very interesting and striking to note the enormous number of sheep raised in Palestine in Biblical times. The following statement is made by Smith in his Bible dictionary:

"Chardin says he saw a clan of Turcoman shepherds, whose flock consisted of 3,000,000 sheep and goats, besides 400,000 beasts of carriage, as horses, asses and camels."

Every bit of care and breeding that has been given the sheep in the past has tended to mould the sheep of today. The rat family really thrive and do better, looking after themselves, than they do with the best care man can give them, but sheep are just the opposite and require attention.

The sheep, since we have any record of it, has been under man's care, and so it is a law of their very nature to depend on man for their protection. Looking back through their entire history, we find them folded at night, protected through the day, and feed, water, salt, etc., furnished them, and so today it is not the nature of sheep to look after themselves.

It was the ancient custom for the shepherd to go before his flock, calling them to follow.

John 10:4, "And when he putteth forth his own sheep he goeth before them, and he calleth his own sheep by name and leadeth them out, and a stranger will they not follow, but will flee from him, for they know not the voice of strangers."

Sheep respond quickly if called by their names, and a good shepherd can call one from a large flock and have it at his side at once by calling its name. However, they will not respond to a strange call, showing by this characteristic their educated love for their master.

In early history the better classes considered sheep raising a very honorable occupation, and both sexes in some of the best families followed sheep husbandry.

Exodus 2:16, "Now the priest of Midian had seven daughters, and they came and drew water to water their father's flocks, and the shepherds came and drove them away, but Moses stood up and helped them."

We also read that King David was a shepherd boy and many other noted men as well were shepherds.

DEVELOPMENT OF THE DIFFERENT BREEDS

The development of sheep, as they concern the people of today, began in England and Spain around the year 1000. At that time both countries were manifesting a great deal of interest in sheep development; and by the year 1500 they were recognized as the great sheep breeding countries of the world.

The Merino

Spain at a very early period developed the Merino, a small sheep, quite free from wrinkles. Its wool was very fine and its fleece of wool very heavy. The early record of the Merino forms an interesting chap-

ter in the history of sheep. Large flocks were moved from south to central Spain each spring, and returned again in the fall, the total distance of these annual journeys being over a thousand miles. The rugged strength and endurance of these sheep was undoubtedly most strongly developed at this time. The Merino is a gregarious animal and the improved American Merino shows the result of this inheritance in its ability to exist in great flocks and to thrive and subsist under a great variety of climatic and other varied conditions.

An A Type Merino Ram

The Merino was introduced into this country as early as 1793, and since that time great progress has been made in the development of both its fleece and form. It is a wool bearing sheep, and its carcass does not produce much mutton, nor is it of a good quality, but because of its hardihood and great wool bearing qualities, it is now in great demand to cross on the coarser wooled breeds. Such great breeders as Humphrey, Atwood, Hammond and many others have done much towards developing this novel sheep.

There have always been several types of the Merino, but I will only attempt to give the reader a vague idea of the most distinct types now in use, and they are the A, B and C types. The American Merino is a short legged, deep bodied sheep, mature rams in full fleece weighing around 120 to 170 pounds, ewes 85 to 130 pounds. Their wool is very fine, and suitable for making the finest clothing. The staple is short, and a twelve month's growth only measures about one and one-half inches in length, but owing to the great mass of folds or wrinkles in the skin, it presents a big surface for growing wool. A mature ram in twelve months will grow a fleece weighing from 25 to 30 pounds, ewes 15 to 20 pounds. The rams as a rule have heavy, spiral turned horns, and the ewes are hornless.

B Type Delaine Merino Ram

The Delaine Merino is a type developed for both wool and mutton, and it is quite free from wrinkles. It is larger than the A type and mature rams weigh from 150 to 200 pounds, ewes 100 to 150. Their wool is fine, and in twelve months it will reach a length of about three inches. Rams will shear 15 to 25 pounds of unwashed wool, ewes 10 to 15 pounds. The rams are both horned and hornless, but the ewes have no horns. They do not have many twins and are slow to mature, but are noted for their rugged constitution and longevity. They are

also noted for the dark exterior surface of their wool, caused by a free flowing yolk that hardens on the surface and turns black.

The Rambouillet

The Rambouillet is a still larger type than the Delaine or B type, and mature rams with a full fleece weigh around 225 to 250 pounds, ewes 140 to 175. Their wool is rather coarse for the fine wool breeds, and in twelve months the fibre reaches a length of about three inches. Mature rams will shear about 15 to 25 pounds of unwashed wool, ewes 10 to 18 pounds. The rams have large spiral turned horns. The ewes are hornless. The Rambouillet is very prolific, robust and a good rustler. He is also a pretty good mutton sheep and is in favor with the big ranchman to breed on his grade flocks, to produce the rugged feeding lambs required at the market, as well as the desired mutton animal.

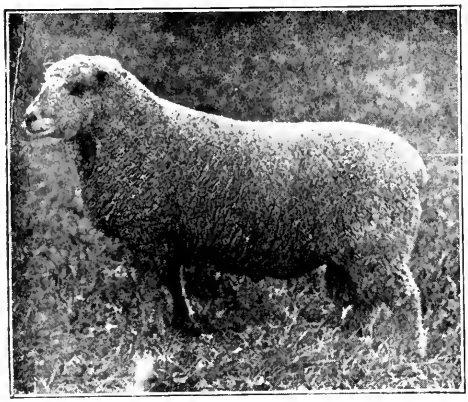
THE ENGLISH MUTTON BREEDS

The English mutton breeds which were developed in small flocks are opposite to the Merino in several characteristics. Good shelter, feed and care are a big part of their inheritance, so in this country, if we hope to attain the success obtained by the British shepherd, we must closely follow and improve on their methods. The English shepherd has always firmly believed that a different kind of sheep was required for different localities, and so England saw fit to develop several types that were distinctly different in size, wool and mutton.

The first really great English breeder to come on the stage was Robert Bakewell (1725-1794). Wool had declined in price to such an extent that raising sheep principally for the wool had become very unprofitable. Bakewell saw the need of a better mutton sheep, and set to work on a long, ungainly, coarse wooled, slow maturing sheep and crossed it with a smaller, finer wooled sheep. He was successful in developing an early maturing, compact, snugly built animal that was easy to fatten. He started a period of improvement in the breeding of sheep, such as the world had never seen. "Better mutton and better wool" was his slogan, and the breeders that followed him are to be commended highly in the success they attained. England today is the native home of nearly all of the modern mutton breeds, and flock-masters from all parts of the world still go there for their breeding stock. The following are the principal English mutton breeds that are found scattered more or less over this country. The American flock-master has done little or nothing towards improving the English mutton breeds.

The Southdown

The Southdown is one of the oldest of the Down breeds. It is a trim, compactly built, early maturing little animal, with a mouse brown colored face. Because of their early maturity and tendency to fatten and round into market condition early, they are especially recommended for early lambs. Southdown rams are always in good demand to cross on all of the different breeds. Mature rams in breeding condition weigh from 180 to 220 pounds, ewes 130 to 160 pounds. The quality of the mutton is par excellent. The two faults most severely criticised are their small size and light shearing capacity.



The Southdown

The Shropshire

The Shropshire is similar to the Southdown in build, although larger and more stylish. The mature rams weigh from 200 to 250 lbs., ewes 150 to 180 lbs., average weight of fleece 8 to 10 lbs. No sheep is more prolific than the "Shrop." Their mutton is also excellent, but the lambs do not round out and fatten as early as the Southdown. The Shropshire is a very showy looking animal, and it is pretty safe to say that among the farmer flock-masters there are none of the Down breeds more popular. They are a dark faced sheep, the wool coming well down over face and legs, and belly is also well covered. Their wool is dense and compact, and well adapted to turn the storms.

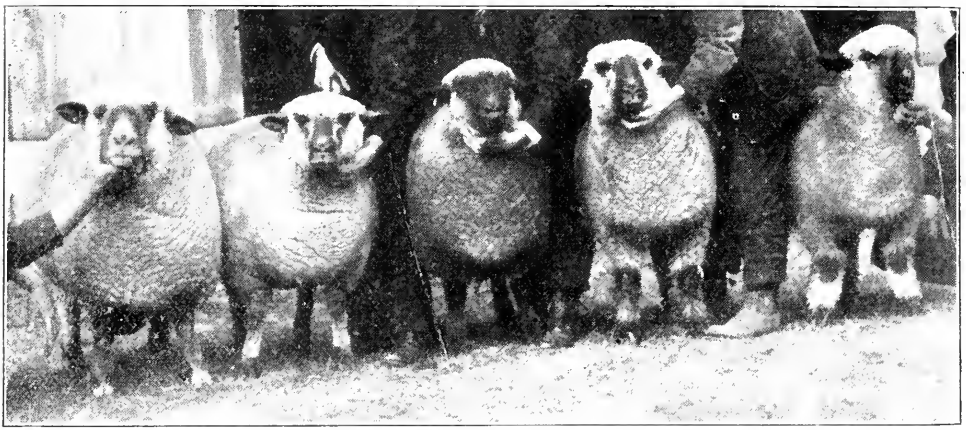
The Shropshire

The Hampshire

The Hampshire is a bold, large sheep, with a long, deep symmetrical body, large bones and striking head features. Mature rams weigh 250 to 300 pounds, ewes 180 to 220 pounds. The head is large, face black with long, drooping ears. They mature very early, for a big sheep, and make rapid gains. Pure bred rams are always in demand from the commercial flock-master to cross with smaller breeds and grade flocks. They are prolific and thrive well if liberally fed. The ranchman is especially drawn to the Hampshire to cross on his grade Merino ewes, to produce large, early maturing lambs for the early summer and fall markets. They only shear about 8 pounds of unwashed wool.

The Cotswold

The Cotswold is a large, coarse wooled sheep. The weight of fleece is from 10 to 14 pounds, mature rams weighing 275 to 400 pounds and even more, ewes 175 to 250 pounds. They are a very poor mutton sheep and hard to fatten. They are used mostly in this country for crossing



The Hampshire

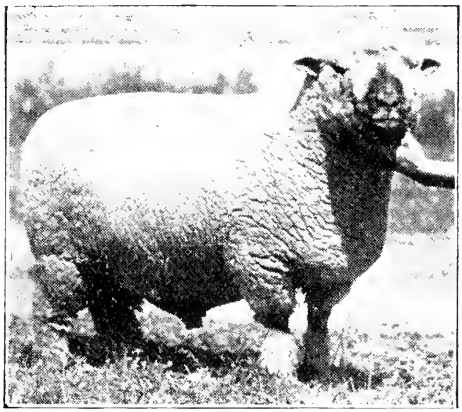
with the finer wooled sheep. In certain districts through the western range country, where good shelter is furnished through the winter months, the Cotswold is in favor in crossing on the Merino and grade flocks. Unless the breeder knows well what he is about, he had better leave the Cotswold alone, because the Cotswold sheep or lambs do not sell well on the market. The central and eastern states also discriminate against the open or loose wool sheep and lambs, because their fleece does not turn water well, and they are not so well adapted to running in the corn or other fall feeds as the closer, more compactly fleeced animal.

A Cotswold Ram

The Oxford Down

The Oxford Down was originally a cross between the Hampshire and Cotswold. It is a large, upstanding animal with a brown face. Their wool is quite dense and compact, average fleece weighing from 10 to 12 pounds. The Oxford Down is the best of the Down breeds for producing wool. They do well on the average farm feeds, and because of their superior wool quality, recommend themselves highly to the average farmer. The writer especially favors them

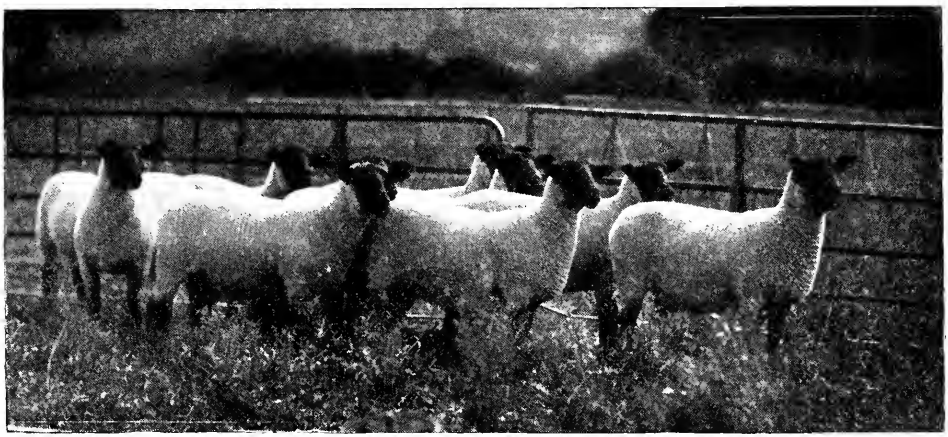
for crossing on smaller breeds, or for up-breeding in a grade flock. They produce good mutton, are prolific, good milkers and make excellent mothers. Average weight of ram is 275 to 300 pounds, ewe 200 to 250 pounds.



An Oxford Ram

The Suffolk

The Suffolk is about the size of the Shropshire. It has a black face, with no wool on face or legs, and very little on belly. It is a most excellent mutton sheep, but a small wool producer, average weight of fleece being 7 to 9 pounds. It is very hardy, easy to fatten and very prolific. In England



The Suffolk

the Suffolk competes favorably with the other mutton breeds. Little is known of it in this country, but probably it would be to our advantage to know more about it.

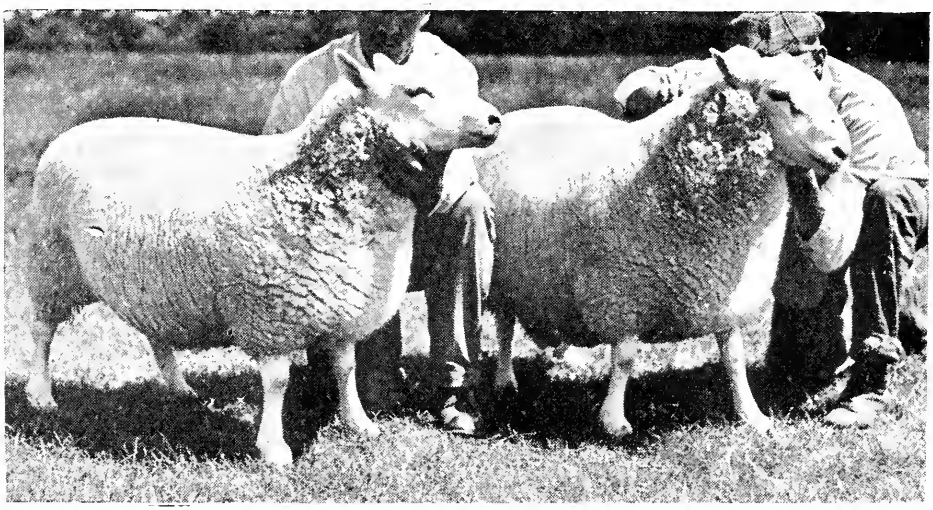
The Dorset Horn

The Dorset Horn is really a Down breed, but most strikingly different from most of them, because of its horns and white face. It is a very strong, rugged sheep, mature rams weighing 250 to 300 pounds, ewes 150 to 200 pounds. The wool is short and the average weight of the fleece is only about 7 pounds. The quality of the mutton is only fair and the carcass, especially in the matured sheep, is inclined to be a little coarse. They are especially famous for their habit of breeding early. They have a large number of twins, and it is possible to get two crops of lambs from one set of ewes in 12 months. Lambs grow

rapidly, and for early marketing are all right. They are also recommended to be crossed with the Southdown or Shrop.

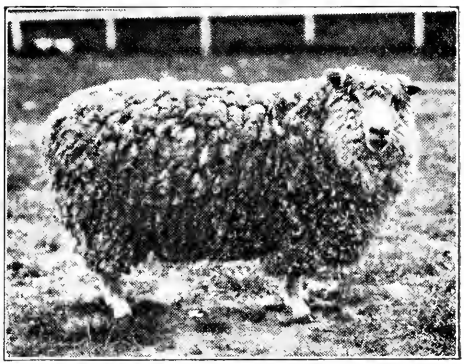
The Dorset Horn

The Cheviot



A Pair of Cheviots

The Cheviot is a small, neatly built animal, with no wool on head or legs, average weight of mature rams around 170 pounds, and ewes 130 to 150 pounds. The Cheviot is a white faced sheep, ears small and erect, fleece weighing from 6 to 8 pounds. They are a very hardy sheep and distinctly a grazing breed, fattening quicker on grass than in the feed lot. The ewes are prolific, and while the lambs are very vigorous and seldom chill and die when born out of doors, they do not mature and attain weight and finish quite as fast as some of the Down breeds. The Cheviots are used mostly in this country in crossing with the Oxford, Lincoln and other larger breeds, the cross producing the kind of mutton sheep or lamb most in demand on the American market.



Leicester

The Leicester

The Leicester is a white faced sheep, with rather coarse wool, inclined to be twisted and curly. Mature rams weigh from 225 to 250 pounds, ewes 175 to 200 pounds. The mutton is rather coarse, and they require a great deal of care and do not mature and fatten as rapidly as the Down breeds. They are used mostly for crossing with the Merino, the cross producing the quality that is desirable in good, thrifty feeders and handy weight muttons.

Lincoln

The Lincoln

The Lincoln is a large, robust appearing animal, with firm flesh, and from brisket to twist, carcass is thick and heavy, and in these respects it is not surpassed by any breed. The wool is very long and coarse, the staple often growing to a length of 12 inches in 12 months, and fleece weighing 12 to 15 pounds. Mature rams weigh around 300 pounds, ewes about 250 pounds. The breed, as pure bloods, is not in demand on the American mutton market, but is very valuable in crossing with the Merino and other smaller fine wooled sheep.

The Romney Marsh

The Romney Marsh is a large, rugged, rather low set sheep, noted

for its hardy constitution and strength of bone. It belongs to the coarser wooled family, but the wool is finer and thicker than the Cotswold or Lincoln. It is considered one of the best lowland sheep known, fattens well on pasture, and crosses well with the Southdown, Hampshire or Merino. The Romney Marsh is gaining ground in the United States wherever it has been introduced, and will likely fill a greater place as it becomes more generally known in this country.

Romney Marsh

Sheep Found Healthy

I am convinced that the present rather unfavorable reputation of sheep in this country is the result of false education and lack of knowledge regarding them. It will be my idea to touch lightly on the physical condition of the sheep, although I will try to show by conclusive evidence that it is one of the most healthy animals known to man. I will deal largely with the facts necessary to the sheep producer to insure success. If I seem to tear down and condemn certain methods, I wish it understood that it is not in a spirit of condemnation, and that my intention will be to point out a better way. There is a mistaken idea that needs correcting, and this is the generally accepted theory that sheep are sickly, when in fact just the opposite is the truth. It may interest the reader to learn that the U. S. Government reports, under its system of inspection at the big packing plants, where every carcass of cattle, swine and sheep is inspected separately, the condemnation of sheep to be practically nil. Think of it, *almost* a one hundred per cent health verdict rendered by the medical fraternity! This knowledge forces us to give the lie to the theory that sheep are sickly. We have, then, a perfectly healthy animal to start with; this much must be admitted by all. The verdict then is: "Mr. Sheep, you are not guilty." The blame must then be placed where it belongs. This we will try to do, regardless of who it may hit.

On the Market

It is necessary that we go to the market to get first hand information regarding the sheep industry in this country. As a salesman on the Chicago market, I have been favored with rather an exceptional opportunity to observe the progress the mutton making industry has made throughout the country. During the past fall and winter (1918-1919), the central states feeders' and farmers' marketable product was deplorably bad; in fact, during the past few years, there has sprung up a class of feeders and producers that has done the sheep business more harm than good. When the "more sheep, more wool" agitation started

a few years ago, every Tom, Dick and Harry got busy writing articles on the gospel of more sheep and wool. They jumped on the fact that sheep are the best plant scavengers on earth and rode it to death.

The Ranchman

It is the custom and practise of the big ranchmen of Idaho, Montana, Nevada, Utah, Washington and Wyoming to ship their product to market mostly during the months of July, August, September, October and November. Some of their sheep and lambs get quite fat on that very nutritious buffalo grass, found on the western range. There are some tame pasture lands, and a great deal of alfalfa is being grown, as well as roots for winter feeding. A big per cent of their shipments consist of sheep and lambs in what we term "feeder flesh." These must go out through the corn belt regions and be fattened and finished for market. During the years I have spent on this market, I have bought and sold many thousands of these sheep and lambs, and can report that as a whole, they were a strictly healthy lot.

Same Problem But Different Answers

I wish to give an example to show what good care and thoughtful management will do, in comparison with negligence and carelessness. A short time ago I purchased a band of very choice western breeding ewes, which were divided between two men, one bunch going to Indiana and the other to Illinois. The ewes cost $11.50 on the Chicago market. One of these men shipped his lambs to market from these ewes, and they sold for $17.80 a head. He also sold $5.00 worth of wool per head from his ewes, making a total of $22.80 per head to remunerate him for the care and feed given his flock for one year. This is only figuring one lamb to the ewe, or one hundred per cent, whereas good shepherds figure around one hundred and fifteen to one hundred and twenty-five per cent and even higher. The male lambs were castrated and all had been docked. They were a mighty fine looking lot.

The other gentleman called me to his place during the early summer. I found his ewes, about four hundred, running in a cutover or brush pasture, with lambs at their sides. There was not enough feed in that pasture, if it had been stewed down, to have furnished nourishment for one ewe and a pair of lambs. The ewes were thin and weak, the lambs were also scrawny, and they did look like a sickly lot. I said to him: "You haven't any feed in this wild pasture that will produce milk on which to raise a lamb." He said he was feeding some silage, so I asked him concerning its quality and condition, and learned that it was mildewed and sour, therefore poisonous. He said that he had called the veterinarian and they had examined several of these sheep and lambs that had died, and they had found a condition in the stomach, which he called something, I have forgotten what. The veterinarians recommended that a vaccine be prepared and the entire flock vaccinated at once. I do not know whether this was done, but I remember saying to myself that if I was eating sour and poisonous food and was about starved, weak and sick, and carrying a heavy load, as were those ewes,

and some one would say that such food was not the thing for me to eat, I would cut it out, and get some good, nutritious food, and let Nature do the rest.

So I said to him: "Why shoot any more poison into them, when they are full of it now? Put them on a good, tame pasture, bring them to the house at night, give your ewes and lambs a little grain and they will come out of this in a hurry." But, suffice it to say, he did not take my advice, as he could see only the result before him, a diseased sheep, because the doctor had so informed him. He shipped them to market, I mean the ones he hadn't finished killing. The lambs weighed about thirty-five to forty pounds, were thin as rails, and sold at a low price. His ewes also brought ruinous prices, because they were thin and looked bad.

These men started with the same kind of sheep, practically the same sheep, but one of them could only see the result and a way of doctoring it, while the other reasoned from cause to effect. The first man undoubtedly said at the beginning: "I have a fine, healthy lot of ewes, and there is a right result or answer to this problem I have before me. If I obtain the right result I will want credit for it, and if I make a mistake and get the wrong answer, I will accept the blame also." He watched his sheep closely and the minute one of them started going wrong, he knew it and set to work to find the cause and to remove it. The results show that he was successful. If the cause is removed, "Doc Nature" will be right there on the job to attend to the health end of it, for that is one of the best things he does, if not interfered with by man.

Must Give Value Received

Every day, somewhere on the market, may be found the man, who though honest enough, has fooled himself, because he did not have uppermost in his mind the desire to give good value. His stuff is not good, and he knows it, and yet he hopes to receive just as good a price as the fellow who has produced the goods. The good feeder always has him beat. He gets a much bigger gain for the feed consumed, and of course gets paid for a great many more pounds. It has been noticed that the good feeder who is just as anxious for his stuff to dress out well as the buyer, is always the prosperous feeder. He knows that if he slips by once he will get caught the next time.

Problem of Reconstruction

It is the duty of every man to carefully weigh any situation, and enter no new field blindly. The question of reconstruction is being given thought, and every man is asking himself what part he will play in the readjustment. In answering this query for the sheep producer, I think I can safely say that it will be a very great one. Better clothes will be demanded by a more prosperous world, and more wool can be the only answer to this demand.

The producer can expect greater demands for his products, as the people of the world still have to eat and wear clothes, and there is nothing that will surpass either mutton or lamb for food, or wool for

clothing. What other animal or product offers so much and meets so great a need? Yes, Mr. Sheepman, your goods will be needed, and you can rightly expect good prices for them. Of course prices are sure to conform to a certain extent to those received for other commodities. Competition in business is sure to be keen, and the most successful in any business will be those who can produce the best quality at the lowest possible cost.

Sheep and High Priced Land

We hear some talk of land being too high for raising sheep. This is a false idea, and is contradicted emphatically by the facts. England, with land ranging from $500 to $2,000 per acre, is forced to raise sheep because of her high priced land. She produces several times as many sheep per acre as we do, and much better ones. Small farmers especially should grow more roots, as greater yields can be obtained per acre in this way. (See methods of British farmers, in chapter on dry lot feeding.)

Rationing Simplified

The rationing of feed to sheep or lambs is one of the biggest problems for the laymen, but it is not so difficult. There is a method to be pursued by the inexperienced sheep feeder that is pretty safe, and he had better follow it until he becomes an expert, and is able to detect any irregularities among his sheep, caused by improper feeding. An abundance of roughage should be kept before the sheep, such as clover or alfalfa hay or grasses. If sheep or lambs have access to all the good, clean, dry roughage they can eat, they will do their own rationing. Great care should always be exercised in starting sheep on feed. (See chapter on dry lot feeding.)

Experience of Iowa Farmer

A little story told me the other day exemplifies my theory quite well, so I will relate it here. A friend of mine was called to see some sheep in Iowa. They were yearling wethers, running in a corn field, a nice lot of stuff which had been doing fine, but at that time were dying fast. The farmer was very much alarmed, and said: "I can't understand this at all. They are getting good water and salt, and are running in the same field they were put in when I got them." My friend said: "I can tell you mighty quick where the trouble lies. This is big corn, the ears are well up on the stalk, the corn blades are all gone, as well as the grass, weeds and everything else, with the exception of the corn. All these sheep have to eat is corn, and it is killing them. Do those clover hay stacks in the adjoining field belong to you?" "Yes," was the answer. "Then," said my friend, "haul some of it out where these sheep can have all they want of it, and you will have no more loss," and he did not.

Beginners and Their Responsibilities

In starting beginners in the business, it is always my policy to impress them with the importance of their responsibilities. I have

noticed that the successful ones always accepted their responsibility and did not cry over its demands. It is requisite and imperative that the shepherd, or master, should be just as willing to "Daddy" the mistakes and failures, as he is the successes and rewards. Unless the beginner can accept this all important working formula, I advise him to let sheep alone. An acute sense of observation is important, but can only be acquired through practise and the desire to succeed.

More Facts Needed

The old school of plodders is fast dying out, and men are accepting their responsibilities. Beliefs, theories, practises and blind faiths are giving place to knowledge, and men are fast learning to look for the exact cause of every difficulty, and ceasing to be blinded by a result which they cannot understand. Not long ago, a bridge in the process of construction, valued at many millions of dollars, fell into the St. Lawrence river. There is little room for doubt regarding the honesty of the engineer who planned the bridge. His faith was probably 100 per cent pure, but all must admit that he was greatly in need of more facts, and that his faith, however strong, did not save his bridge.

Development of the Western Flock

There are several reasons why I am addressing myself principally to the corn belt section of the U. S. First because the ranchman has made wonderful progress in the development of his flocks, to meet the market demands, during the last fifteen years, also the ranchman has imported some of the best pure bred rams and has brought his flock up from the old Merino, a good foundation sheep, to a mighty good combination wool and mutton animal. The old inbred, white livered, delicately constituted sheep of a few years ago has nearly disappeared from the western range. Last year there were sold on fifteen different markets a total of 14,929,369 sheep. Out of this grand total, it is pretty safe to estimate that the ranchman contributed sixty to seventy per cent. We received on the Chicago market during 1918, 4,629,736 sheep, and by far the greater part were range grown. Out of this number, 968,000 feeding sheep and lambs and breeding ewes were shipped to the adjacent country around Chicago to be bred and fattened for market. A big per cent of the ranchman's shipments were fat and good enough for the killers, and the ones not fat enough to kill were, in the main, a fine quality lot of stuff.

Quality of Western Sheep

It is an easy matter, during the fall months, to buy a uniform band of feeding sheep or lambs, all one age and about the same weight. The sheep and lambs direct from the range are, as a whole, an almost ideal lot of feeders. They are bright eyed, rugged, thrifty and healthy looking. Some of them are taken out by good shepherds who like sheep, and they fatten and finish them and put them back on the market, a better bunch of stuff than when they were taken out. The finish has improved the quality. A large per cent of these fine feeders, however,

are taken out by men who know nothing about sheep, and care less. They take these sheep home and turn them loose on whatever rough-

It is the Duty of this Range Herder to Find the Best Grazing for His Flock and Otherwise Look After Their Needs

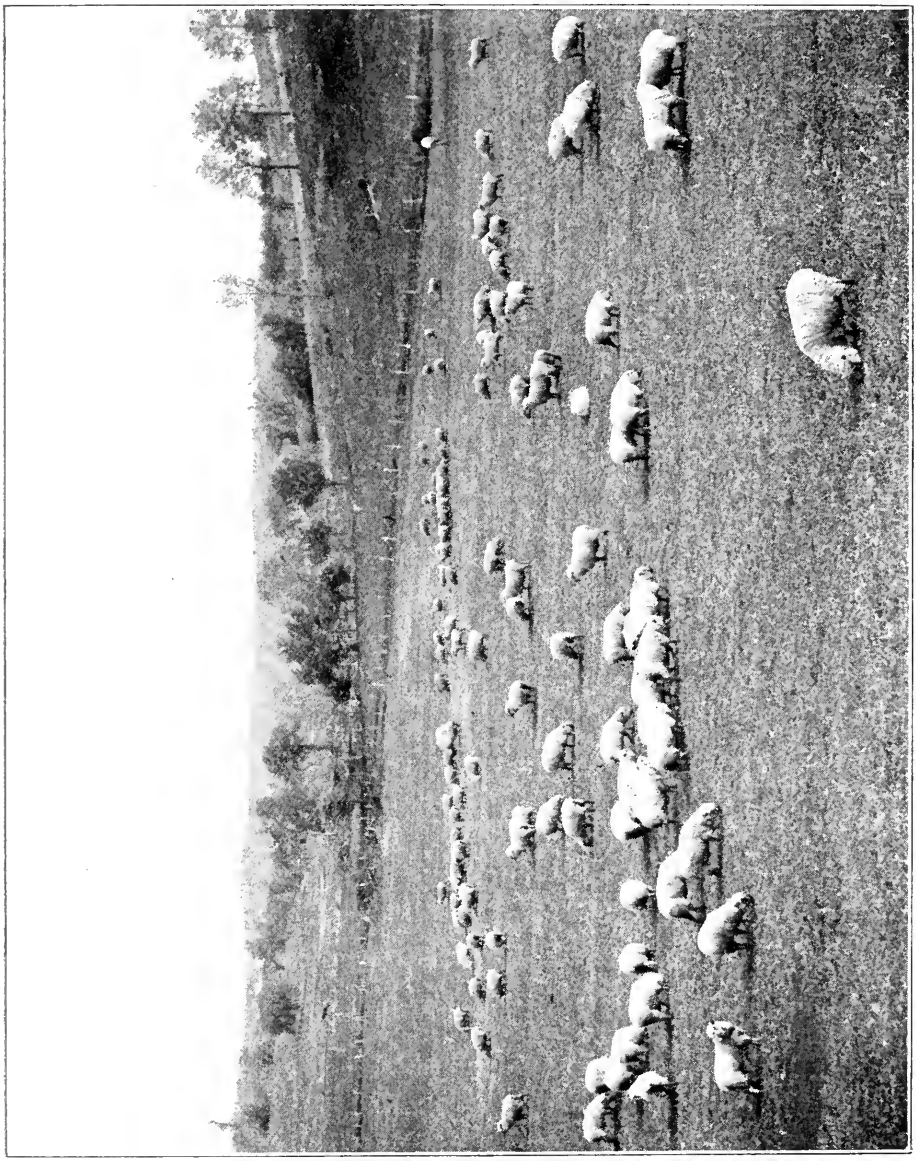
age they have, and when it is gone, ship them back to market. Some of these sheep land on pretty good feed and get fat, but a good many are not so fortunate, and they come back to market not much better than when they went out.

Commendable Efforts

There is a concerted effort being made at this time by the U. S. Government, the various states and other interests to overcome this evil with education of the right sort. Our own yard company is extending itself nobly at this time. New sheep docks are being built, and a system of unloading directly out of the cars into the sheep house is already in operation, that promises great improvement over the old system. An overhead tractor and trailer system just installed, by which hay is delivered to the various alleys through the three large sheep barns, is very advantageous to the sheep shipper. The best clover hay and alfalfa can be selected and stored in this overhead runway and can be delivered and fed on short notice. It also prevents injuring or shrinking sheep, which was often done by the old system of team and wagon.

All Up to American Farmers

The ranchman has nearly reached his maximum of production, so it is all up to the corn belt farmer to come to the front and do his part.



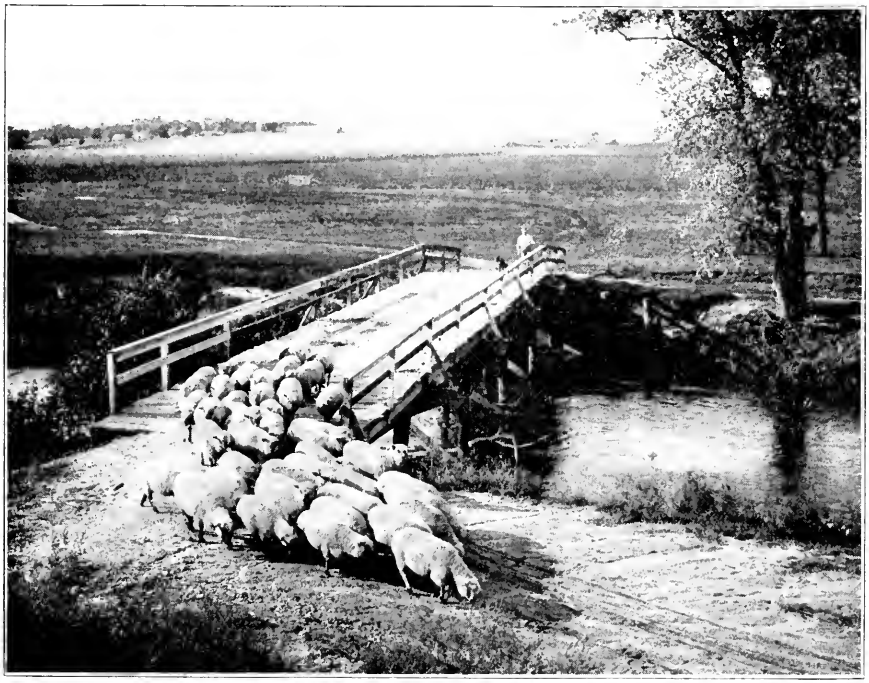
A Well Kept Flock Means a Well Kept Farm; Both Point to Harmonious Farm Life

CHAPTER II

MANAGING THE FARM FLOCK

Charged to the Wrong Account

THE sheep has been rightly called the "Golden Hoofed Animal," and because it does give so much, one would suppose men would make the most of this fact, but not so. The things that come easy to men, or that are given to them, they do not appreciate, and the man who spends his life aiding his fellowman is seldom respected as much as the selfish millionaire.



A Good Flock is One of the Assets of This Farm

Mortals try all the hard ways first. They have tried to make sheep a success by first charging to the sheep's account all of their own mistakes and calling them diseases. A noted Englishman, Professor Huxley, has well said: "Humanity presents no more pitiable aspect than that afforded by its disposition persistently to resist every footstep of its own progress."

Sheep are healthy and will give back more for the good care and treatment accorded them than any other animal in the world, but if they are mistreated they will give nothing.

Good Advice

John Fitzgerald says: "Every quarter section of corn belt land is capable of furnishing the feed for a flock of 40 ewes and their produce, without interfering with the present system of management. Think what the returns from a flock of 40 good ewes, rightly managed, would mean to a farm. Remember, when you see a thing that needs to be done for a flock of sheep, that it should be done RIGHT NOW, as tomorrow may be too late. It may be truthfully said that carefully watching and doing the little things at the right time means everything in handling sheep. They are capable of paying greater dividends than any other animal, but an irritable, impatient sort of person cannot make a success with them."

The complaints have been many and varied in regard to the quality of sheep produced by the average farmer, and I believe if he really knew what a bad job he has been doing in the sheep producing line, he would try to make amends. We often hear the remark on the market: "What a trashy lot of natives!" The bulk of them come to market weighing from 40 to 140 pounds, uncastrated, part fat and part lean, with no semblance of uniformity or breeding.

Big, coarse, bucky lambs are not the best meat; neither are the thousands of thin, cull native lambs and old, thin cull ewes that have to be slaughtered, because a feeder will not buy them. Is it any wonder that the consumer balks at such meat and refuses to eat it; thereby causing severe fluctuations in the market? This deplorably bad situation will not improve until the man who keeps sheep on the farm refuses to raise them in a haphazard fashion. There are a few good producers but they are at present decidedly in the minority.

The ram should be kept separate and placed with the ewes at a certain time, so the lambs will come at a regular period and all be about the same age. Castrating and docking should be attended to without fail, and good feed should be provided for the ewes during winter months. Good, early grasses and feeds should be provided for the lambs, and they should be pushed along with a definite marketing time in view, instead of any time in the future that happens to suit, or whenever circumstances force their marketing. I would like to see more good sheep producers in the business, men who will give their sheep a major place on their farm, but we need far less of the cull and buck lamb variety.

I propose to point out in this chapter a good business type of ewe, that will produce the lambs required on the market, if bred to most any of the pure bred rams of the breeds mentioned in the former chapter, and the condition that ewe and ram should be in at mating to insure a big per cent of lambs; feed required for the winter flock, preparing for the lambing season, lambing, shearing, producing and marketing the early lamb, caring for the summer flock, etc.

Any one wishing to breed pure blood sheep receives my hearty ap-

proval, for I believe this country will need more and better bred sheep, and that the business will be profitable, but I am not dealing with that phase of the industry in this book, because I have not the space to point out the good and bad qualities of each breed, nor how to select and weed out for points peculiar to each breed, as well as crossing, and even in-breeding necessary to develop and bring forth certain qualities.

Selection

To the man who feels he would like to own sheep and do them justice, I offer the following suggestions for selecting breeding ewes and rams.

Select ewes that are:

(a) Broad backed, well grown and lively on their feet.

(b) Sound of teeth and milking organs; examine carefully for hard lumps in udders.

(c) From one to six years old.

(d) Covered with dense, compact coat of wool; belly and legs should be well covered.

(e) Uniform in size and breeding.

If ewes meet with above descriptions, it makes no difference whether they are white or black face, native or western.

Get a ram that is wide awake, bold and strong in constitution, pure bred if possible, active, vigorous, from one to three years old, symmetrical and well developed, not too fine a bone, well wooled and straight in legs.

The selection of breeding ewes is no small matter, and the best are always the cheapest, for a good ewe will eat no more than a poor one. No ewe kept for commercial purposes should shear less than eight pounds of wool. My experience has taught me to favor the western ewe showing a little Merino blood, if more than 200 are to be kept in one flock. Western ewes are generally marketed by ages, so with a little care, any aged ewe can be had. They are generally uniform in size, a little hardier than natives, and if direct from the western ranches, you can be sure they are in fine physical condition.

Number to Buy

In reference to the number to buy, all depends on the buyer, the amount of pasture, shed room and his facilities for handling them properly. I would suggest, however, that a sufficient number be bought, so the investment will be adequate to insure the interest of the shepherd, thereby forcing him to produce the quality of wool and mutton that will net him good returns.

Age

Regarding the ages to buy, there is no definite advice to be given. If purchaser intends to stay in the business more than one year, he should buy a good, young set of ewes. The writer has a big following

of experienced sheep men through the central states, who favor the older ewe. They buy an old, solid toothed set of ewes, strictly heavy shearers, big of frame and strong, and breed them to a pure bred ram. In selecting old ewes, the ewes' teeth must be carefully examined, udders examined for lumps, other defects, etc. Old ewes make good mothers and throw and raise a big per cent of lambs. These men get a fresh set of ewes every fall. The quality of the lambs, from a market standpoint, is excellent, and if fat, they sell at top prices.

Farm Flock Recommended

I do not favor the latter system of raising sheep, although it is all right and a money maker. This man must send his ewes back to market fat, as they are too old to go to the country again. These old ewes he has to keep through until fall, so for a short time he has two sets of ewes on his place, his fresh set and the old ones, that are kept to be made fat on the late fall feeds. My advice to the layman is to buy a younger set of ewes, allot them a place on his farm and breed them up from year to year. He will soon learn to love his flock, take pride in it, and to be ever zealous for its welfare. The possibilities of money making are just as great, or greater, than the other way, but aside from this, there is that about developing and bringing an article up to a certain state of perfection that is gratifying to any producer. Just getting money does not constitute successful achievement. The gambler may be in possession of a lot of money, but I never knew one who was really happy. To produce something that will be of benefit to one's fellowman spells success.

Most Important Periods

One often reads or hears someone say something regarding the most important period between the mating of the ewe and the marketing of the lamb. It is my contention that there is no most important period. There is no number from 1 to 9 that is most important. We have feeders who are "crackerjacks" six days out of the week, but are failures because they miss one day.

Mating

I will try to cover the whole period, and while, for lack of space, I can only touch each period, I will try to give the reader a few important fundamentals.

(a) Ewes should be in flushed or gaining condition when ram is placed with them.

(b) Shear ewes around the rear parts and see that dung does not collect there.

(c) Ewes should be dipped at least a month before mating.

(d) Use one good, strong, young ram with every twenty-five to forty ewes.

(e) Feed the ram a pound of grain each day.

(f) Keep a record of the time when the ram is turned in with the ewes and when taken away and allow a hundred and forty-five days from mating to lambing.

(g) Ram will serve more ewes if separated from the ewes during the day, but wethers should be placed with him, so he will not fret.

(h) By placing a bib on a common ram, he may be used as a teaser during the day and save the good ram from working through the flock.

Pregnancy

During the period of pregnancy, ewes should gain fifteen to twenty-five pounds. Utilize cheap roughage, corn fodder, clover hay, well

Utilizing Cheap Roughage

matured corn ensilage, roots, etc. Grain should be gradually added to roughage, a month to six weeks before lambing, and during this time ewes should have plenty of leguminous hay and very little ensilage, none if it is mildewed or sour.

The following tables may be used as a guide for rationing ewes during pregnancy. Ewes weighing one hundred pounds were used in this test. Grain ration should be increased or decreased with the weather, and there is always more danger of overfeeding than not feeding enough.

The following rations have been fed to pregnant ewes by the Illinois Station. Where pasture and corn stalks were used, the ewes were not fed hay and grain each day. (The figures represent pounds of feed or of gain per ewe per day.)

Feed for 100-Pound Ewe

RATION I

Corn silage	.9
Clover hay	2.0
Daily gain	.1

RATION II

Corn silage	.2
Clover hay	.4
Pasture in clover and in corn stalks	
Daily gain	.06

RATION III

Corn silage	.5
Clover hay	.7
Pasture in corn stalks	
Daily gain	.07

Feed for 115-Pound Ewe

RATION IV

Shelled corn	.25
Alfalfa hay	2.50
Daily gain	.17

RATION V

Shelled corn	.30
Alfalfa hay	1.50
Oat straw	1.25
Daily gain	.08

RATION VI

Shelled corn	.06
Alfalfa hay	.80
Oat straw	.25
Blue grass pasture and corn stalks	
Daily gain	.07

Since starting to write this book, I have consulted a number of successful sheep producers, and they as a whole advocate against feeding ensilage to pregnant ewes, during the month or six weeks previous to lambing. They claim that the ewes are inclined to lose their lambs, and that neither ewe nor lamb is strong at time of birth. No doubt poor ensilage was cause of complaints. Roots in limited quantities are considered by many good shepherds to be a good feed for pregnant ewes.

During pregnancy, or through the winter months, ewes should not be kept housed. They should have plenty of exercise and the shed or barn they are housed in at night or on stormy, winter days, should always be well bedded, dry and well ventilated, to avoid drafts. They should have clean, pure water in abundance and access to salt.

Henry reports that Carlyle and Kleinheinz at the Wisconsin station recorded the amount of feed eaten by well-fed, pregnant Shropshire, Dorset, Southdown, Merino and Shropshire-Merino ewes, ranging in weights from 138 pounds to 157 pounds each at the beginning of the trial. The ewes were divided evenly as to size and breed into lots of 12. The mixed grain fed consisted of equal parts of corn, oats and bran.

The corn forage consisted of corn fodder and corn stover. The table shows the average amount of feed consumed daily by each ewe during the winter and the average daily gain of each lot.

Feed required to maintain a breeding ewe one (1) day in winter:

SINGLE TRIAL LOT I

Shelled corn	.5
Mixed hay	2.0
Corn silage	2.5
Av. daily gain	.23

SINGLE TRIAL LOT II

Whole oats	.5
Mixed hay	2.0
Corn silage	2.5
Av. daily gain	.23

SINGLE TRIAL LOT III

Wheat bran	.5
Mixed hay	2.0
Corn silage	2.5
Av. daily gain	.20

SINGLE TRIAL LOT IV

Dried brewers grain	.5
Mixed hay	2.0
Corn silage	2.5
Av. daily gain	.24

SINGLE TRIAL LOT V

Mixed grain	.5
Corn forage	3.3
Av. daily gain	.19

SINGLE TRIAL LOT VI

Mixed grain	.5
Corn silage	2.9
Mixed hay	2.1
Av. daily gain	.16

SINGLE TRIAL LOT VII

Mixed grain	.5
Roots	2.9
Mixed hay	2.6
Av. daily gain	.13

All rations tested were highly satisfactory. The daily cost of maintaining these large ewes was 2c per head or less, according to value of feeds used. In previous trials at the Wisconsin station, Craig considers Alsike Clover hay one of the best dry roughages, as it was eaten with relish and with small waste. Corn fodder and oat hay also proved satisfactory.

Preparation for Lambing

(a) In preparing for the lambing season, farm work should be planned so that the shepherd can keep a close watch over the flocks both day and night.

(b) Ewes that are about due to lamb should be kept away from other live stock as large animals may injure them. Hogs greedily devour young lambs.

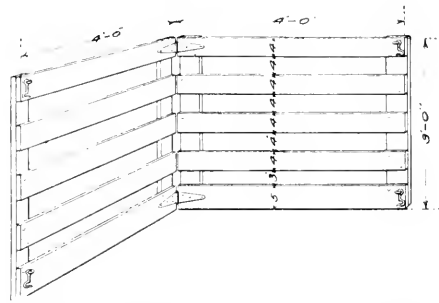
(c) In cold weather provide warm quarters, well bedded with a south exposure, as sunshine is important. Ewes should have plenty of room to avoid crowding, and openings, small gates, etc., should be closed, through which ewes heavy with lamb might squeeze and injure

Our Little Friends Taking a Sun Bath

themselves or the lambs. Small openings through which young lambs might creep and wander away should also be closed up.

(d) A portable lambing pen 4x4 or 4x6 is the best place for a ewe and lamb until the lamb is two or three days old and the mother owns it. Several of these should be provided. There should also be provided a place well bedded and dry, where ewes and their lambs may be together, until the lambs are 10 days to two weeks old, when they can be turned loose.

(e) It is well to have castor oil, linseed oil or vaseline to be used on the hand when entering the ewe to give assistance; also nipples are requisite for feeding milk to young lambs.



This detachable lambing pen hinged together may be hooked to the wall, other pens may be added as needed, one end being hooked to the corner of last pen and the other to the wall. After lambing panels may then be folded and stored until the next season.

Lambing

When the ewe is giving birth to the lamb, do not disturb her so long as everything seems to be going well. Be very sure she must have help, and give time for much laboring before assistance is attempted. Then learn what position the lamb is in. The natural delivery is made fore feet first, nose lying snugly on fore feet, or it may be delivered hind feet first. Before entering ewe to get lamb into proper position, the hands should be perfectly clean, with finger nails cut very short to avoid scratching or cutting tender membrane of the ewe. "Cleanliness is next to godliness." Smear the hand well with vaseline or oil. Care should be taken not to tear the parts of the ewe. After quietly and patiently working the lamb into position, pull very steadily on the lamb, slightly downward, and pull when the ewe labors. Be sure to keep the head coming with the fore feet until the nose is exposed.

These Lambs Must Be Fed by Hand, While the Swollen Udder is Being Cared for

Care of Ewe and Lambs

After the lamb is born, give the ewe close attention for several days. Note whether she casts afterbirth, and whether her

bowels are normal. Examine her udder, and milk her if the lamb does not take all the milk. Give her all the pure water she wants, but not in large quantities, unless it can be kept before her all the time. She should have good feed, such as clover hay and oats, but not much grain for two or three days. After the lamb is a week old, the ewe must have plenty of good feed, until grass. Wool locks should be clipped from the milking organs, so young lambs will not be sucking one of them instead of the teat.

The shepherd need not be worried if the ewe refuses to eat immediately after lambing. If sheep receive good feed and have plenty of exercise, health will be good or normal, but if the bowels should become irregular from improper care or feeding and there seems to be an immediate need, one-third pint of raw linseed oil may be given, or more if needed.

A ewe torn inwardly, or failing to cast afterbirth should be washed out daily with injections of boiled water, after the water has cooled. Ewes with swollen udders should be removed to comfortable quarters and carefully milked. Their lambs should be fed by hand on warmed cow's milk until the udder is normal, to avoid poisoning the lamb. The lamb should be kept in an adjoining pen where the mother can see it and smell it, otherwise she may disown it. If the lamb's teeth make the teats sore, the ewe should be milked, and soft soap may be rubbed on the teats to keep the lambs from injuring them, or the lamb taken from the ewe for a few days, until the teats are healed up.

When the lamb is born, place it and the mother in a small pen. Little attention need be given the strong lamb whose mother has plenty of milk. If the ewe has no milk, it is best to take a little from one that has more than enough for her own lamb. The next best thing is to feed whole cow's milk, using about two tablespoonsful every two or three hours. The milk should be warmed, and to accomplish this, place a bottle in a pail of hot water. Pail and bottle should be taken to where lamb is to be fed, and the milk should not be hot, just milk warm.

Taking Care of the Orphans is Only One of the Things Necessary to Save a Big Per Cent of Lambs

Chilled Lamb

If the lamb is weak, get it to nurse as soon as possible by holding it to the teat. If it refuses to nurse, then feed it until it gains in strength and develops an appetite. If the lamb is chilled, place all but the head in warm water and keep pouring in more as the water cools,

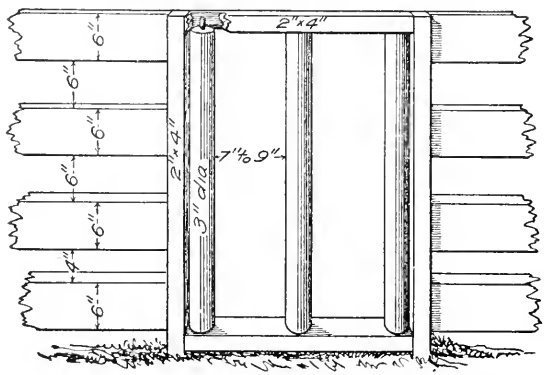
to keep the temperature up so one's hand is comfortable in the water. When lamb becomes somewhat lively, rub it dry with a coarse cloth, wrap all but its nose in a blanket or thick cloth, feed it, and place it in a warm place to sleep. Keep it away from its mother no longer than is necessary. It is best to wrap a lamb with cloth, that is to be placed in artificially heated quarters.

Teaching Ewe to Own Lamb

If ewe disowns lamb, shepherd must get her to own it. Try smearing on her own nose and the rump of the lamb some of her own milk. When the lambs are twins and the ewe disowns one or both, then both lambs should be kept in an adjoining pen where the ewe can see them, and both placed with the mother at the same time, so that in her anxiety to let the one that she owns nurse, she will let the other one nurse also. If ewe with good supply of milk is left without a lamb, she should be employed to nurse one not getting enough milk from its own mother, or to adopt an orphan. Sometimes removing the skin from the dead lamb of the intended mother and placing it on the back of the stranger is effectual; again to rub the lamb under the ewe's tail does the work. Keeping ewe away from water for a few hours and rubbing the lamb with salt is advocated as effectual.

Remedy Must Be Found in Cause

The different remedies advocated to cure through medicine, the various so-called diseases or troubles among young lambs or sheep will receive no consideration from me, inasmuch as the methods pursued by different doctors are so varied and contradictory. I agree with the doctors when their advice is that the least medicine or drugs given the better. Sheep require a variety of feeds, and a strong argument in favor of changing sheep from pasture to pasture is that it gives them a variety, and an opportunity to obtain the food they want. Give your sheep good, clean, wholesome food, pure water, dry sanitary shelter, and if trouble does present itself, find the cause and remove it and the result or disease will vanish in short order. I have every consideration for the feelings and beliefs of my fellowman, and would not advise any man to quit the use of drugs as long as he believes they are beneficial and a remedy for disease. I honestly believe that doctors as a whole are honest and high-minded men, but I cannot believe that their drugs have done the sheep business any good. All of my observations, during the years I have spent in this business,



Lamb creep with rollers for uprights

strongly convince me that drugs and sheep do not go together. Just as long as men depend on drugs to eliminate physical difficulties, just that long will they be breeding for themselves disappointments, and also the difficulties which they wish to eliminate.

Teaching Lambs to Eat Early

In preparing lambs for market, build a creep near feeding ground and feed them all of the following or any other good grain mixture that they will eat. The figures indicate parts by weight. Start lambs eating hay and grain early. A little sugar sprinkled on the feed, or a taste from the hand will start them eating.

FIRST PERIOD (30 Days)		SECOND PERIOD (30 Days)		THIRD PERIOD (30 Days)	
Corn, ground	6	Corn, whole or ground	6	Corn, whole	6
Oats, crushed	6	Oats, whole or crushed	6	Oats, whole	3
Cottonseed or linseed meal	6	Cottonseed or linseed meal	2	Linseed oil meal	1
Clover or alfalfa hay		Hay or pasture		Hay or pasture	
Wheat bran	6				

Docking

Cleanliness in feed, water and everything is imperative. Dock and castrate lambs any time after they are five days old, but it should be done within three weeks after birth if possible. There are several methods to be employed in docking, but the one adopted by the most successful shepherds is to tie or cord the tail very tight with paper fleece twine, just above where it is to be cut. Use a bright, clean, wide wood chisel, a large pair of evenly sharpened pincers or a sharp knife. It is generally best to do the docking in the evening, so the lambs will lie down and do no fretting. Be sure to remove the cord the next morning, leaving it on only about twelve hours. Heavy paper fleece twine makes an ideal cord as it is large enough not to cut the flesh. The tail should be cut off about 1 to 1¼ inches from the rump. It is also important to push the tail towards the body at the time the severance is being made, so that there is enough loose skin to close over the stump. Pine tar may be used if the flies are bad.

Patent docking irons are often used, which burn through the tail. There is hardly any loss of blood, but if the iron is too hot, the wound may be slow in healing. A board with a hole in it, to pull the tail through serves to regulate the distance from the body to sever the tail, and also keeps from burning the lamb. The irons should be quite hot and the operation performed quickly, so as not to unnecessarily burn the tail.

Castrating

Castrating should be done at the same time as the docking, or the following morning. Lambs should always be held gently, but firmly. The knife or shears should be bright and clean, and a nice, clean place should be selected for the operation. Cut off lower third of the scrotum,

then the testicles may be removed by grasping them gently but firmly and pulling them straight out, one at a time. Many good shepherds prefer to pull them with the teeth, as it is very difficult to grasp them firmly enough with the fingers. Each operation should be done thoroughly, but as quickly as possible.

Early Lambs: Why?

The early marketing of lambs in the central states has several very commendable advantages over the custom of running them through and marketing them in the fall and winter. Here are a few points to be considered:

(a) They gain little or none during the two hot summer months, July and August.

(b) Hot, droughty weather always presents extra problems, sometimes that of water, and generally a question of sufficient nutritious, fattening feeds.

(c) It lessens the demands of the pasture at the time most needed for the breeding flocks.

(d) Labor is saved if lambs are marketed at weaning time.

(e) There is also the decided advantage of avoiding the congestion and heavy receipts always encountered in the fall.

(f) The use of the money obtained is a consideration to many people at this season of the year or before the harvesting of crops.

(g) It is also a fact that the big, quick gains are the most remunerative, one time with another.

(h) Lambs will make a bigger gain on less feed during the first four months than at any other time in their lives.

Producing the Early Lamb

To produce the early lamb, early rye or wheat fields may be utilized to good advantage as a part of the roughage. Early pasturing of either is beneficial, rather than a detriment to the rye or wheat. Early alfalfa or clover is fine, and blue grass pasture is always good. The shepherd must exercise caution in pasturing alfalfa to avoid bloating and scouring. Advantage should be taken of the spring and early summer grasses, but these grasses, no matter how good, will hardly produce the kind of lambs required at the market by the time or before the hot weather begins. Lambs should average at least 65 to 75 pounds on the market to be of desirable weight for the demand during the summer months. The most desirable weight for fat lambs during the late fall and winter is 75 to 85 pounds on the market.

Shearing

Shearing is one of the harvesting times, and should not be treated lightly. Burs, cur dogs, poor fences, dirty barn yards, carelessness and neglect are all children of old "Daddy Failure," and do not fit in with the sheep business. Digging a ditch in a dress suit, or scrubbing a floor in a silk dress is right in line with turning sheep with valuable

wool into a field infested with burs. The wool should be clipped, if possible, with a clipping machine. A longer staple is obtained, a smoother job done and less risk is run of cutting the wool twice, which is injurious to its value, or the sheep once.

Shearing should be done from the middle of April to the middle of May. A board platform should be erected, fleece removed, wool ends gathered up and platform swept clean after each sheep shorn. The belly should be shorn first and this wool, along with the odd locks, placed in the center of the fleece. The fleece should be picked up carefully and thrown on a clean table and folded thrice lengthwise. Then fold in each end and roll, exposing the inside of the wool. All dung locks should be carefully removed and thrown in the manure pile.

Wool should positively never be tied with binding twine. It will decrease its value 10 per cent. Strings of the twine remain in the wool and will not take a dye, therefore such wool cannot be used in making a fine grade of cloth. Always use paper or three ply India twine. Sack or bail, and store in a clean, dry place.

Dipping

Dipping should follow shearing in the course of a week to ten days. After the ewes are shorn, ticks or mites go over on the lambs, and

Western Breeding Ewes Being Changed to a Fresh Pasture

unless the whole flock is thoroughly dipped, it will only be a matter of time until the flock is infested again. It is well to dip the flock twice, the second dipping about two weeks after the first, giving any eggs not destroyed by the first dipping time to hatch out. It is also requisite to dip the breeding flocks again, just before cold weather.

Ticks are a nuisance, and sheep infested with them will not fatten nearly so well. It is also well to take every precaution against scab, because if it breaks out in the winter time it is hard to conrol, and great inconvenience and risk is encountered if sheep have to be dipped in the dead of winter.

MANAGING THE FLOCK THROUGH THE SUMMER

When it is not practicable or possible to market lambs early and they are to be run through and fattened on the fall roughage with grain, a few suggestions for managing the summer flock may prove useful.

Weaning

If lambs are being prepared for the early market, it is well not to wean them until they are placed on the market. But when they are to be carried through, lambs should be weaned reasonably early, as a pair of robust lambs are very rough with a ewe, especially if they are not getting all the milk they want, and no grain is being given to offset this. It does not do a lamb any good to keep thrusting its nose after the teat, under the hot flanks of the ewe. Both mother and lamb are better off if separated. There is, of course, a natural weaning time, but under certain conditions they ought to be weaned before this time.

STOMACH WORM

Progressive System of Changing Pasture Recommended as Remedy

Lambs are much more affected by the stomach worm than the older sheep, and it is often possible to shift them on to newer and unused pastures through the hot months. The progressive system of pasturing and forage crops are receiving the most consideration as a remedy for the stomach worm.

In the early spring, rye or wheat fields can be utilized to give the blue grass or tame pastures a chance to get started. Then the sheep can be shifted to the clover pasture, and again on the clover meadow, after the hay is cut. From there to the stubble fields, and then into the corn fields, where with an added amount of grain the sheep or lambs that are to be marketed are made fat. Of course there are the forage crops, such as rape, soy beans, etc. Through the summer months sheep should not remain on one pasture more than two or three weeks at a time. Lowlands should be avoided, especially on wet, rainy days, because it is when the grass is wet that the stomach worms crawl up the blades of grass, and are ready to be taken by any animal that comes along. It is claimed that stomach worms are much worse on lowlands than on high. There should always be shade, and if there are no trees, then some shelter from the hot sun should be furnished.

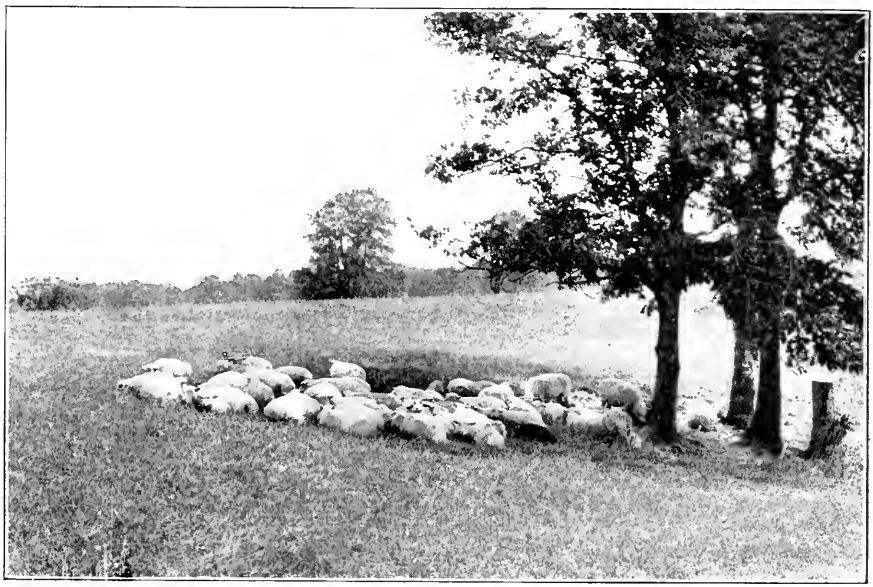
Progressive System on 160-Acre Farm

F. R. Marshall of the Department of Animal Industry, offers the

following suggestions for a three year rotation system to apply on a one hundred and sixty acre farm:

25 Acres Corn: To finish 20 yearling cattle and 40 hogs.
15 Acres Silage Corn: Roughage for 20 cows, 20 yearling cattle, 80 ewes, 20 ewe, lambs and work stock.
40 Acres Wheat and Oats: Grain for sale or exchange for other feeds.
20 Acres Clover Hay
20 Acres Clover Pasture: Season's grazing for 20 breeding cows.
20 Acres Permanent Grass Pasture: Grazing for 20 yearling cattle on feed for December shipment.
10 Acres Forage Crops: In the above sheep would be grazed as follows:
First: On winter wheat.
Second: On grass pasture with yearling cattle.
Third: With cows on clover pasture.
Fourth: On clover meadow after hay is cut.
Fifth: On grain stubble.
Sixth: In corn fields after silage is cut or corn harvested.
Seventh: On winter wheat.
At other times on rape, soy beans, or other grazing crops on 10-acre field. Unused forages harvested for winter feed.

Such a plan as this allows sufficiently frequent change of pasture without any part of the flock going upon land that has previously carried sheep in the same year. The forage crop land is a safety measure for reliance in case of shortage of other feeds, and could regularly be used for carrying the reserved ewe lambs from weaning time until winter.



Shade is Very Important On a Hot Day

After Weaning

After weaning it is often advisable to place the ewes on dry pasture, so the milk flow will be decreased. Udders should be watched closely,

and milked out every two or three days if necessary. Lambs really should never run through the summer without some grain, because after they are weaned, unless they have good feed they are liable to go back, and are hard to start again in the fall.

Feeding the lambs a little grain each day affords an opportunity for counting and inspecting them. Oats, corn, wheat, barley and such concentrates as wheat bran, linseed oil meal or cake and cotton seed meal are good. Usually it is not necessary to feed more than one-fourth of a pound of grain per head daily, if the pasture or forage is good. Oats alone serve as a good builder, but will not produce much fat. Salt and good water are always imperative, and both should be always kept before them.

Bringing in the Flock at Night

The writer has always felt that the breeder or feeder who really likes his stock will want it at home when night comes, besides it is a part of the nature and breeding of sheep to be housed or penned at night. Why go against a handicap that education and breeding has established, by leaving your sheep in the field at night? There can be no good results expected from either man or beast, if they are full of fear. My recollections are all in favor of bringing in the flock at night. When I enter a barnyard at sunset and see the cows, horses, sheep, etc.,

These Sheep Recognize This Dog As Their Friend

they all have the look: "We're glad to be here. We know this is our home and that we will be protected, because you are our master." I love a good dog, but the roaming cur is no friend of mine, neither have I been especially drawn to the family who are so poverty-stricken that

they do not know where their next meal is coming from, but still keep from one to half a dozen mongrels that put in the night killing lambs or anything they can find. I strongly advocate a high dog tax as being the most effective method of combating the cur dog nuisance.

Sheep as Plant Scavengers

Henry says: "Sheep are the plant scavengers of the farm. Because of its dainty manner of nibbling we might suppose its likes were few and its dislikes many. However, just the opposite is the case, and no domestic or wild animal is capable of subsisting on more different kinds of food; grasses, shrubs, roots, cereal grains, leaves, and in times of scarcity, fish and meats. In Norway and Sweden they often have to exist through a hard winter on pungent, resinous evergreens."

Twenty-five Reasons Why the Average American Farmer Should Keep Some Sheep On His Farm

1. He can procure any number that will suit his financial condition.
2. Sheep pay dividends twice a year, making quick returns on the investment.
3. The per cent of profit depends on the shepherd, and may be 1 to 200 per cent.
4. There are no expensive buildings necessary.
5. They will do better on poor producing land and do more towards building it up than any other animal.
6. They both clothe and feed their master.
7. Owing to their fine mastication they do not scatter weed seed over a farm through their manure.
8. If the feed-lot is dry when they go into it, it will be dry when they come out, because they do not tramp it up and get it knee deep in mud.
9. They will do more towards cleaning up a farm and keeping a good one good than any other animal.
10. They are gentle to handle and nice to feed.
11. Wheat and rye fields may be pastured winter and spring, when other animals would injure the crops.
12. They tramp the earth well down on the roots of wheat and rye, and by cropping it down cause it to stool out and produce a bigger crop.
13. The cost of maintenance is small.
14. Sheep can be fattened with less grain and in a shorter period of time than almost any other animal.
15. Any class of feed can be turned to a profit through sheep, by adding to it the rations required.

16. The quality of a flock can quickly be improved, because one good ram will get 50 to 60 lambs, and may improve the quality 100 per cent.

17. They are one of the healthiest animals in the world.

18. They can subsist and thrive on more different kinds of feeds than any other animal known to man, barring the goat.

19. Sheep are called the dual purpose animal, but they do many things at the same time, for instance, make wool and food, fertilize land, clean up a farm, tramp the wheat or rye, and a multitude of other things.

20. They offer fresh meat at any time of the year.

21. Quick cash can be had in case of need.

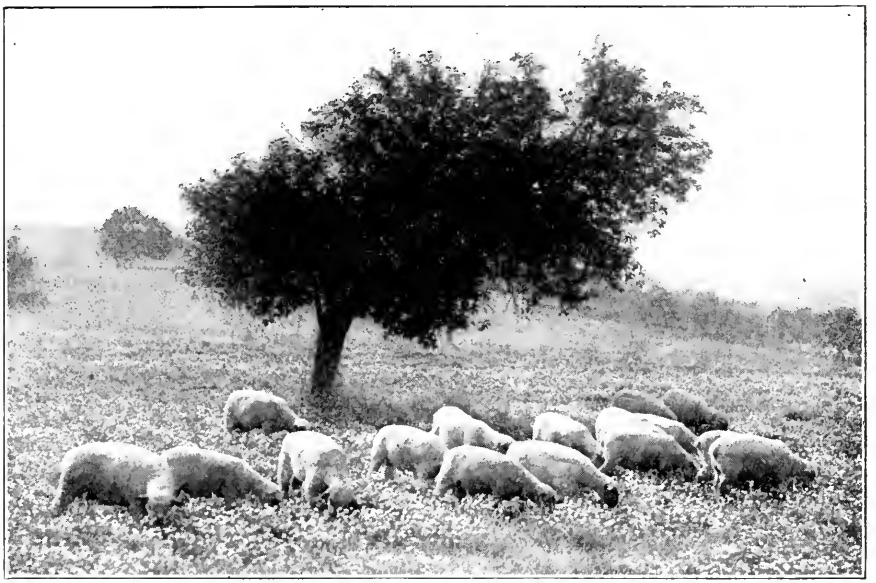
22. They offer the opportunity to start the boy in business.

No Trouble Getting This Young Man Interested in the Business

23. They will help kill the child's worst enemy, fear.

24. By producing forage crops to feed sheep, greater returns can be obtained from the land.

25. They will convert a weedy pasture into blue grass and clover quicker than any other class of live stock.



Some sings of the lily, and daisy, and rose,
And the pansies and pinks that the Summertime throws
In the green grassy lap of the medder that lays
Blinkin' up at the skyes through the sunshiny days;
But what is the lily and all of the rest
Of the flowers, to a man with a hart in his breast
That was dipped brimmin' full of the honey and dew
Of the sweet clover-blossoms his babyhood knew?

I never set eyes on a clover-field now,
Er fool round a stable, er climb in the mow,
But my childhood comes back jest as clear and as plane
As the smell of the clover I'm sniffin again;
* * * * * * * *
And so I love clover—it seems like a part
Of the sacerdest sorrows and joys of my hart;
And wharever it blossoms, oh, thare let me bow
And thank the good God as I'm thankin' him now.

—Riley.

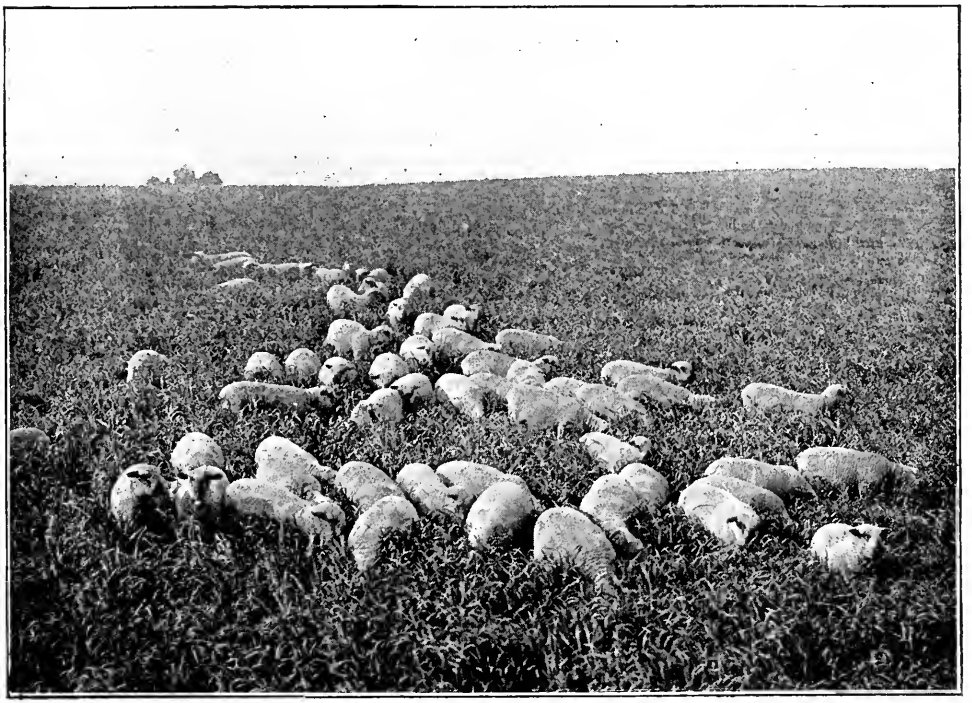
Great Yields of Corn Can be Obtained by Sowing Rape, Soy Beans, Field Peas, etc., in with the Corn, and then Sheeping it Down in This Manner

CHAPTER III

FIELD FEEDING

Cleaning and Fertilizing the Farm

DURING the last few years there has sprung up a practice of using the thin fleshed western or range sheep and lambs on the central states grain farms to clean up weed patches, stubble fields and the like. Farmers have learned they can fertilize their land and produce bigger crops in this way, but they have not all learned that this class of feed



This Farmer Added the Required Amount of Grain to His Roughage to Produce These Fat Sheep

will not, in itself, produce fat sheep and lambs, which is necessary to make this class of feeding a success. It will be my intention to point out in this chapter some of the methods to be followed to insure success. I would also like to say that the farmer who has not the time nor the inclination to study the most approved methods for feeding and fatten-

ing sheep before he goes into the business had better let sheep alone, for the odds would all be against him.

Feeders of sheep and lambs are composed of two general classes, the field feeder and the dry-lot or barn feeder. As the field feeder is first to come on the market in the fall to purchase his feeders, and also as he generally finishes his stuff in the dry lot, we will take up his problem first, and lead up to dry lot feeding.

Quality of Feeders

It is during the autumn that the ranchman sends his fat sheep and lambs to market. If the range is good, a large per cent of his holdings

Several Thousand Range Sheep on the Way to Market

get fat, but there are always a good many that are not fat enough for the killers, and these are termed feeders. It is in the fall, also, that he culls his flocks and sorts out everything not suitable to be kept on the range. Included in the ranchman's shipments in the fall may be found fat lambs, feeding lambs, fat and feeding yearling wethers, and fat and feeding aged wethers. He also markets any young ewes in excess of the number he has feed for during the coming winter, and he is careful to sort out and market all old ewes that will not stand the hard, open winter. Of the latter, part may be fat and go to the killers, or they may all be thin with good solid teeth, and good for one or two years' service as breeders through the central states, where good shelter and nourishing food is provided. These old ewes may also be broken or short toothed stuff, not good enough for breeders, but will get fat with the proper feeds. In fattening such ewes grain should be ground or cracked; in other words they should have soft feed. They generally sell at a low price, only a little higher than cull ewes, a kind not suitable even to go out as feeders. The culls are bought by the killers for canning purposes.

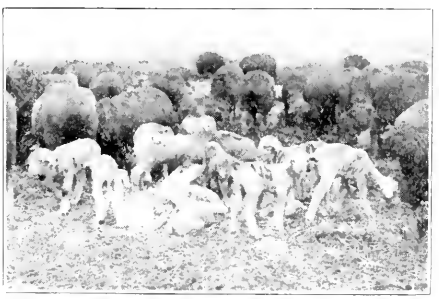
Fall Roughage

Nearly every year, just after the harvesting of the small grains,

there may be found on nearly every farm throughout the central and eastern states, a considerable amount of roughage which makes excellent sheep and lamb feed. It is found in the form of oat, wheat, rye, and barley stubble fields, blue grass pasture, weedy corn fields and waste patches generally. Farmers have learned that they can market this otherwise wasted roughage via the sheep route and at the same time clean up their farms and fertilize their land. Some falls, when weed seeds ripen, and quite a little grain is left in the stubble fields, sheep will get quite fat without any added grain, but this is very unusual and should never be depended upon. Ordinarily, this class of feed will put on a big, growthy gain, but will not produce the finish required at the market. Quick gains are generally the most economical, and most successful field feeders have found that they make more money and have less risk if they feed grain with this roughage to the amount required to insure a finished product by the time rough feed is gone, or at most enough grain so as only to be required to feed in a dry lot for a short time after green feed is gone.

Feeders Adaptable to Feed

If the field feeder feels he wants to utilize his green feeds first, and only feed grain in the dry lot after green feeds are gone, then he should use caution in regard to the class of feeders he buys. There is a very important rule to follow in selecting feeders, so no mistake will be made in getting something that will be adaptable to one's feeds. Always buy a class of sheep or lambs that you can be sure to offer better feed than they have been receiving. This rule holds good among all kinds of live stock. During the past few years conditions on the range have greatly improved. On many ranches good feeds are provided and flocks are brought through the winter in good shape and start out in the spring strong, with the ewes giving a good flow of milk for the lambs. In some places tame pastures have been developed to give the ewe and lamb an early start, and later to graze on buffalo, wheat and other western grasses, much more fattening and nutritious than the average grasses or roughage found in the central states. Idaho and Washington, which states are the big contributors during July, August and September, produce very fine stuff and sheep and lambs from these states are, as a rule, fleshy, even the feeding end. Some of these western sheep and lambs come to market as fat as the farmer can make them with grain. The farmer taking these fleshy feeders out to feed must know this and be prepared to offer them nutritious feeds, and generally a grain ration must be added, otherwise his sheep and lambs will grow but will not fatten, and may lose flesh. There are, however, ranges that do not produce such fleshy stuff, or it may be drouthy in that section, making it possible to obtain a thin class of



Range Ewes Brought Through the Winter Strong and Vigorous

feeders, healthy and all right, that will do to go out and clean up even wild pasture and do pretty well on it. If the quality of the feeds to be utilized is poor, get something that shows plainly that it has been running on poorer feeds. Of course this will only hold good where sheep or lambs still remain strong, for if they are in a run down, weakened condition they must have good feed and care. A good, strong, fleshy set of feeders will gain faster than thinner ones on good feed, but the feed must be good.

Cattle Ranchman Offers Example

One of the big cattle feeder buyers on this market, who owns a large tract of wild pasture land in Indiana, said to me: "A short while ago a commission firm purchased for one of my neighbors a fleshy set of feeding cattle. These cattle were turned out to graze through the summer on this wild land, and in the fall you would not have known them, for they had gone all to pieces, while our cattle, running in an adjoining pasture made a fine gain and were a set of nice, fleshy feeders ready to finish on grain during the winter."

Better Fall Feeds Provided

The most successful field feeders have found it expedient to provide more and better field feeds to go along with the ordinary roughage found on the average farm. Such forage crops as rape, soy beans, field peas, etc., sown in with the corn, or in a field alone, make excellent sheep feeds, and sometimes no grain need be added at all; but this must be watched closely and an added amount of grain given if the sheep are to be marketed when green feed is gone, or the farmer must be prepared with clover or alfalfa hay, corn stover, bean straw or other suitable roughage, and succulent feeds, such as ensilage, roots, etc., to finish them up in a dry lot.

Noah Fouts, a lamb feeder of Camden, Indiana, writes as follows regarding the merits of soy beans as sheep feed:

"We turned to sheep several years ago because of the available roughage we saw going to waste every year. We soon learned, however, that this roughage alone would not produce the finish required at the market. We began looking for a supplement for high priced grain and think we have found it in soy beans. We do not claim that we can always finish our sheep or lambs without adding some grain but we have reduced it to a minimum.

"We have found soy beans a wonderful sheep feed. We generally sow them in with the corn or rape and turn the sheep in on them. We always produce an abundance of clover, alfalfa and soy bean hay as well as corn stover. We have found it imperative to have an abundance of dry roughage for winter feeding.

"We seldom miss the top of the market and our last load or tail end feeding was good enough to put an extreme top on the lamb market. When feeding in the dry lot, we feed a ration of about equal parts shelled corn and soy beans. We are raising bigger and better crops and have increased the value of our land considerably. We find sheep practical on our high priced land. I strongly caution any one starting in the

sheep business to steer clear of the scenery method and not to try handling sheep unless there is a liking for them."

Comparison of Results

During the fall months, or western season, some of the big ranchmen market several thousand lambs. They send down a train load at a time to be unloaded at feeding and grazing stations a few miles from the market. These sheep or lambs are then ordered in from day to day by the commission man, a few cars at a time as the market demands. There is offered then from day to day the same ranchman's breeding. I have seen these lambs taken out by the various countrymen and have observed the different results obtained by these men with idntically the same class of stock. The weights most approved for feeding lambs run 55 pounds to 62 pounds. Going out, these lambs were a thrifty, hardy, choice quality, uniform band. Some returned them fat, with a big gain, quality improved, with the finish obtained, while others returned them pretty good or half-fat with a good growthy gain, but not fat enough to be good killers, and too heavy for desirable feeders. Still others returned them weighing less than when going out as feeders, these lambs plainly showing abuse, lack of feed, and likely no salt, water or care. In a great many instances these men would charge that their lambs as feeders were not healthy, therefore the results. Some were ignorant of the requirements of the market and supposed that a half-fat or pretty good sheep or lamb was satisfactory to a certain extent to the killers.

Finishing Sheep vs. Cattle

It might be well to state here that there is a practice among cattle feeders of short feeding or half fattening cattle, and that there is a good demand for the various kinds of beef, but that long ago it was learned that a half-fat or pretty good sheep or lamb was not a success. Only a month's feeding often raises the quality of a lamb or sheep two or three dollars a hundred weight. Ninety to one hundred and twenty days is generally the required time to fatten and finish a sheep or lamb, whereas it takes eight to ten months to fatten or finish a steer.

When to Market

Very often in the fall farmers are able to get such cheap gains that they can ship their sheep or lambs back to market and sell them at the price paid for them as feeders and still make money. However, the purchaser should never figure on a small margin, and generally he should allow himself a margin of two to three dollars per hundredweight between the price he pays for his feeders and the expected fat price. During the big receipts in the fall, however, fat stuff generally is, and should be, at the low point of the year, therefore fat and feeder prices may be close together at that time. Neither the central states producer or feeder should plan his feedings so that he will have to market his fat stuff during the time the big fall rush is on. His marketings should either be made before or after.

Kinds to Buy

Kinds to buy depends on the feeds that are available. Thin natives should never be taken out as feeders from a market, for they do not fatten evenly, and if wormy, cause trouble. Native sheep or lambs should be made fat by the man who produces them. If thin, they have to sell to the packers as culls at low prices. In this country lamb meat is favored, but in England and some other countries, mutton is equally favored. Lambs are generally the most economical class to feed. First, because of the premium paid for them over mutton; second, because all the tests show that lambs consume less feed for the amount of gain than do older sheep. Some feeders favor older sheep where roughage is the principal consideration, and if it is to be fed in the field. The claim is made by these men that older sheep will come nearer getting fat running in a field than lambs. The writer gives this argument some consideration, as any young animal is harder to fatten than an older one, if given exercise. Where a large amount of roughage is to be consumed, a bunch of old ewes, too old to go as breeders and that have been suckling lambs all summer, will put on a big gain, and often can be bought at a price so low that they are to be preferred to lambs. Aged wethers, which, however, are seldom over three or four years old, are always good plant scavengers, make good corn huskers and are easy to handle and fatten. Yearling wethers, if of handy weights when fat, say under a hundred pounds, sell as lambs to the butcher, providing their front joints break, which is one way of convincing the butcher that he is buying lamb. (Desirable weights change from time to time.) They are also, as a rule, robust and hardy, but are a little harder to finish than older wethers.

If the farmer has cutover brush land or wild pasture he wishes tamed down, goats should be used, or big, strong wethers, thin in flesh. Ewes with lambs at their sides should never be used for this purpose. Southwestern desert goats make ideal brushers.

It is generally advisable to dip sheep or lambs being taken out as feeders from the market, and if not prepared to do it at home, the purchaser can have it done at the market at a nominal cost.

Starting Sheep on Green Feed

Great care should be exercised in starting sheep or lambs on green feed. In most sections of the range country it gets pretty dry during the summer months and the grass is short, although good. Placing these sheep on rank, green feed, especially after they have had no feed at all for twenty-four to thirty-six hours, is likely to produce disastrous results. Sheep should first be placed in a dry lot and given all the good hay they can eat. Next morning they can be turned out for a couple of hours and then brought back on the dry feed again. This should continue for about a week, extending the time a little longer each day. Scours, caused by sheep gorging themselves on green feed, should receive immediate attention, and the only cure is to place them on dry feed until the scours are dried up. If sheep that have the scours are allowed to run on green feed they will get very weak, and may die.

Grain: It's Importance

The writer has always believed that sheep should be brought to a lot near the barn yard at night. It gives the feeder an opportunity

Western Lambs Coming in From the Cornfield to Receive Their Bite of Mixed Grain and to be Yarded for the Night

to inspect them carefully, as he should, to weigh them to note their progress and to count them. These things should be done from time to time. Even though the feed in the field is excellent, it has been my experience that the feeder who gives his sheep or lambs grain each evening, even if only a little taste, is always well repaid for doing so. They will be at the gate each evening to get it, and it will quiet them so they will lie down and fatten. Men who practise yarding their sheep at night get about two pounds gain to one by the fellow who leaves them in the field at night. Feed troughs must also be kept well cleaned, and any left overs given to the hogs. When troughs get dirty they should be given a thorough scrubbing with lime water.

Number to Be Shipped in Car

The feeder should bear in mind that he cannot load as many large sheep in a car as small ones. In taking feeding lambs out, generally from three hundred to three hundred and fifty fifty-five to sixty pound lambs can be loaded in a thirty-six foot, double deck car. More close wooled lambs can be loaded than open wooled lambs. One double or two single loads going out will make three decks going back to market. Overloading should be avoided. Hundreds of thousands of dollars in dead and excessive shrink is suffered every year through overloading.

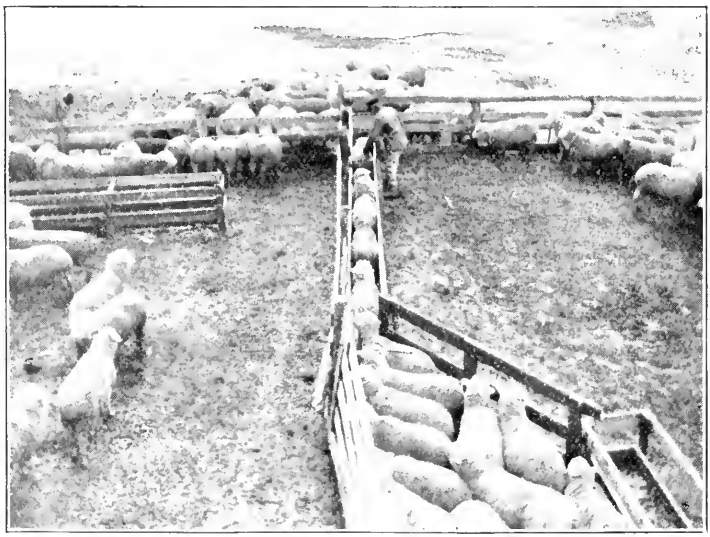
In shipping to market it is generally safe to load wooled sheep into a thirty-six foot, single deck car as follows:

120 to 130	75-lb. to 85-lb. lambs
130 to 140	65-lb. to 75-lb. lambs
100 to 110	115-lb. to 130-lb. sheep
110 to 120	100-lb. to 110-lb. sheep

Clipped sheep or lambs can be loaded ten to fifteen heavier to the deck. It is very seldom sheep can be safely loaded to the full weight capacity of the car.

Sorting for the Market

In preparing sheep or lambs for market, it is a rare thing for all the sheep and lambs to take to the feed at the same time or eat the same amount. The stronger will crowd the weaker away and take their feed, therefore part of them will get fat and be ready for market before they are all ready. So it is advisable where two or more decks are being fed for market, to sort off a load or so as fast as they become fat and market them. To do this, crowd them all in a tight lot, and then go through them carefully, handling lamb after lamb. Use the index finger and get well through the wool half way down on the side, and then with a sweeping motion push the finger back and forth across the ribs. If you feel a washboard effect you may know that sheep or lamb will not do. Find a sheep or lamb that you are sure is fat, handle his ribs thoroughly and get him well fixed in your mind, then use him



This Man Knows that Sheep and Lambs Must be Made Fat to Meet the Demands of the Market and He Is Sorting Off a Load or So for Shipment

as a model. Sort off a load or more that measures up to his standard. Avoid just looking at them and deciding they are fat. The best judges of sheep on the market do not dare to trust to sight alone. Lambs or

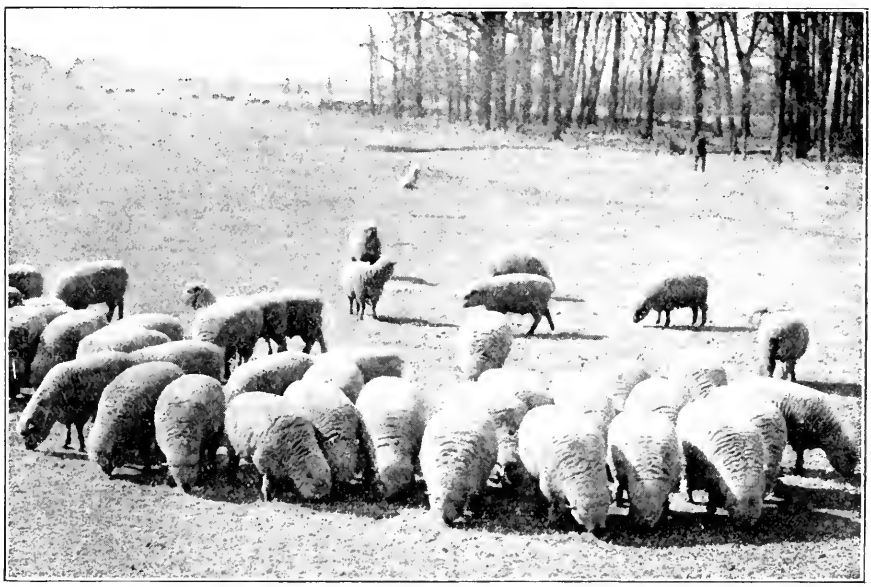
sheep good enough for the market also have fat, thick tails. After becoming well acquainted with the quality of flesh and you are convinced some of them will do, then you may sort them off by hand.

Cutting Chute

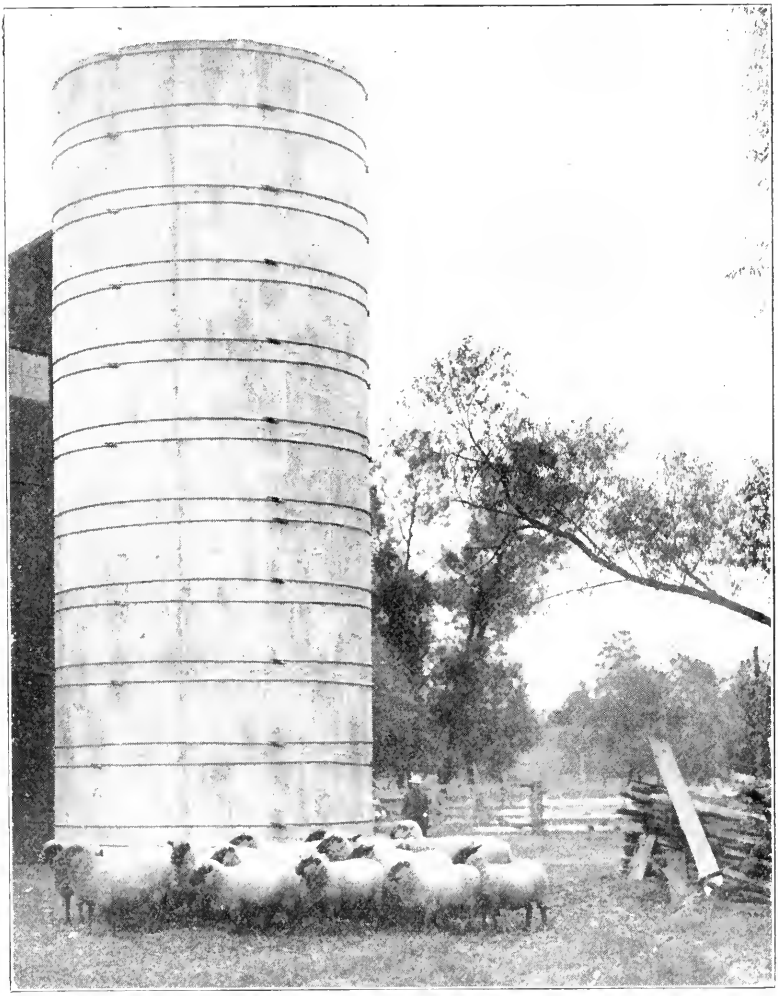
It is much easier, however, to obtain a few pieces of carpenter's chalk, and as fast as a lamb is found to be fat, put a small chalk mark on his head or across his back; or chalk the ones which are not fat. Build a cutting chute in front of a small gate, so in swinging the gate, sheep coming towards it may be cut in or out. This is generally easy to accomplish, and often a temporary chute can be built by arranging loose gates or feed troughs. Sheep always run better if they are driven towards an opening, or the light.

Flock Must Receive Kind Treatment

If a stockman must get angry, he should do it out in the field somewhere all alone, where he can throw mud to his heart's content and not hurt anything but himself. To become angry at a dumb animal is really very foolish. Whenever I drive by a farm and see sleek, well kept stock everywhere, I say to myself, a fine, even tempered man lives there, for an angry, high tempered man and fat well kept stock positively do not go together.



Native Lambs That Have Been Docked and Castratcd and are Fat, Ready for the Market



Such Storehouses for Feed are Found on Many of the Best Farms These Days

No doubt great improvements will be made in the construction of the silo and the method of putting up the silage and caring for it, during the time it is being fed. There can be no doubt that the silo is a wonderful invention and that it is here to stay. It is a safety valve and a method of insurance during drouth or short crops the following year, and has been proven practical and the feed economical.

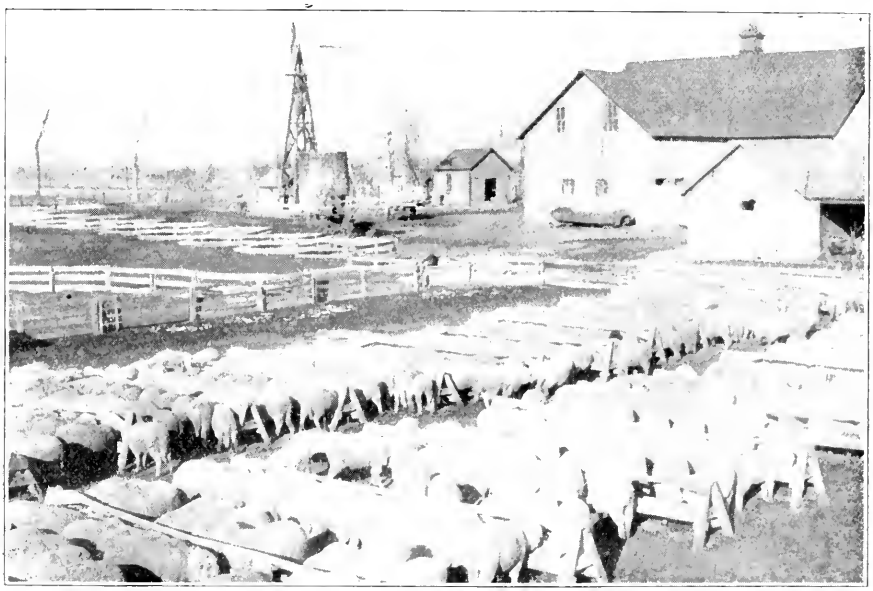
The secret in putting up silage, as in canning fruits or vegetables, is to keep it fresh, sweet and pure. If this is done (and fed with all the good dry roughage sheep or lambs will consume) good results are certain to follow. Bad results from eating sour, canned vegetables do not reflect against canning them, but against the method used, or more likely, the carelessness of the canner. No system ever devised by mortal man has been able to keep men from making mistakes, and none ever can. Each individual must obtain for himself the knowledge required.

CHAPTER IV

DRY LOT OR BARN FEEDING

Green vs. Matured Feeds

IT is the contention of the man who feeds exclusively in the barn or dry lot, that if he lets all his feed ripen and mature, he gets much better results when he is fattening and finishing stock for the market than if he feeds the same feeds green in the field. A successful cattle feeder said to me, in response to a query put to him in the month of June, as to whether he was letting his cattle that he was preparing



Sheep Being Finished in the Dry Lot for Market

for market run on the grass: "Indeed I am not; and if I feed until September they won't be put on grass. I can haul feed to them, and I don't want them out in a field walking off flesh, for it costs too much to put it on." Of course there are lots of good feeds, such as stubble fields, forage crops and the like that can be utilized by running sheep on them in the field, but the results obtained by the farmer in the past plainly show that the practise of trying to fatten sheep and lambs in the field for the market has not proven satisfactory.

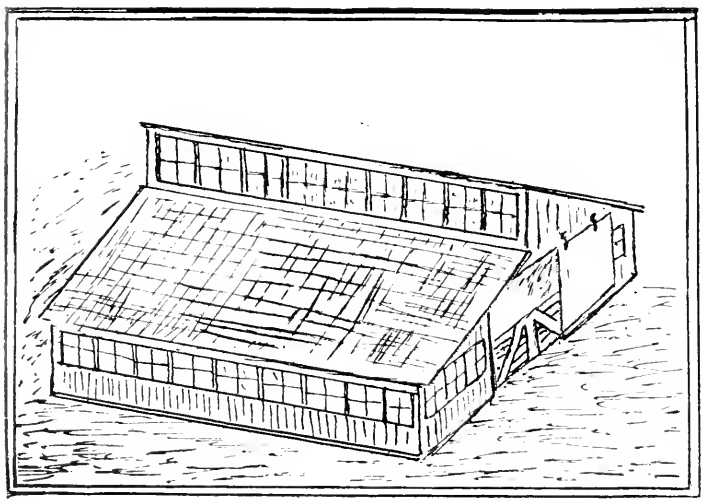
Methods Employed by Michigan Feeders

Possibly, at this time, our best dry-lot or barn feeders are found in Michigan. These men do not do much pasturing or field feeding. They prefer to grow alfalfa, clover and other good hay in abundance, raise what grain they can and buy the balance. They do not feed much ensilage or roots, and while they produce a highly finished article, and their sheep and lambs dress out well, it is certain they could produce their gains more economically if they fed a ration of succulent feeds. These men, as a rule, buy lambs and place them directly in the barn, and there they remain until they are shipped to market.

Perhaps I can give the reader a little better idea of the methods employed by some of these feeders by relating a little experience of mine a few years ago, when visiting some customers. These men were quite large operators, and as I had been supplying them with their feeding lambs I concluded one week-end to run up and see them, get better acquainted, and study their methods, for I had learned that they were very good feeders. As I had not advised them of my coming and their place was only a short distance from town, I concluded to walk out. Coming up to their place and seeing their sheep barns, I jumped the fence and walked over to them. When I had reached the barn and was proceeding to do some investigating on my own account, out came a gentleman from one of the adjoining buildings and asked me my business, and what I was doing among the sheep. I told him who I was, and he said: "We do not allow strangers among the sheep, and I am the only one allowed to feed and care for them."

Good Care and Big Gains

He explained that the quieter the lambs could be kept, the bigger gains they would make. He had them under a big open shed or barn, with a loft used as a storage place for hay and grain running through



This enclosed sheep barn or shed faces south. Combination hay and grain racks may be built around the walls. Windows should be hung on center pivots and placed at a good height above hayracks. A small room should be boarded off in one corner, with stove and cot for shepherd's use during lambing time. Note wide door, also well constructed gate to shut sheep in when door is open. This barn need not be expensive, and it can be constructed in any size, allowing 12 to 16 square feet for breeding ewes, 5 to 8 for lambs being prepared for market. No provision is made for storing fed in this enclosed shed, and feed must be brought from other barns.

Drawn by Jet Wimp

the center. The roof came well down, I should say about six feet from the ground, with the north and west sides loosely boarded to keep out the storm. This big shed or barn was divided into small pens, each to hold about forty lambs fitting in pretty snug, but with plenty of room to move about. Hay racks were built around three sides and a trough long enough to accommodate twenty lambs on each side, ran through the center, although a good combination hay and grain rack would likely have been much better. There was also a trough of fresh water at one end. He told me that the lambs were never moved out of these pens until they were shipped to market, and that they made a gain per head of 10 to 16 pounds a month, over a period of ninety to one hundred and twenty days.

Value of Sheep Fertilizer

These men had a great deal to say regarding the merits of sheep manure as fertilizer. Being raised in the corn belt proper, their land did not impress me much, and still these farmers had exceptionally good buildings, and they bragged to me about 50 to 60 bushels of corn per acre and proportionately good crops of wheat, rye, oats and excellent clover and alfalfa. The successful methods of feeding sheep followed by these farmers were given as the reasons for the big red barns and prosperous looking farm buildings. It is only in recent years that some of the corn belt farms have begun to feel the strain of everything going off and nothing coming back. Some of these men are finding sheep the answer to their problem, and more will turn to them as time goes on.

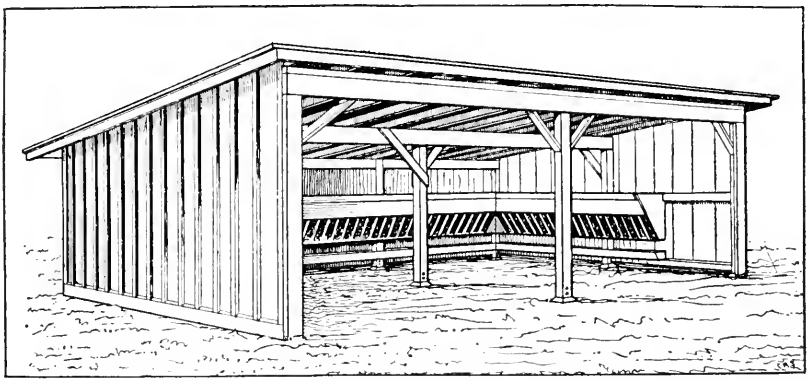
From Field to Dry Lot

Among field feeders, only a few get their sheep fat enough, without finishing them on dry feed. As long as the green feed lasts it is all right to let the sheep have the run of the field during the day, but just as soon as it is gone, they should be shut up. Sheep will do no good running out after the green feed is gone, and will only walk off flesh as fast as it is put on, looking for what they cannot find. Sheep or lambs running in a field during the winter will eat lots of feed, but they will not get fat.

Shelter, and How to Feed

Sheep or lambs being fed do not need much housing, and a good shed to protect them from cold, rains and severe storms is sufficient. They can be fed in an open lot, but they should have some shelter, and hay racks especially should be in the dry. Lot should be high and dry, and separate from cattle and horses that will tramp it up and get it muddy. Sheep should be fed regularly, night and morning, and should always be driven out of the lot before the grain is placed in the troughs. After the grain is equally distributed in all the troughs, the gate can be opened and the sheep let in. After a few times the feeder will notice that every lamb goes directly to his own place at the trough. It only takes a few minutes for each lamb to clean up his share, hence the

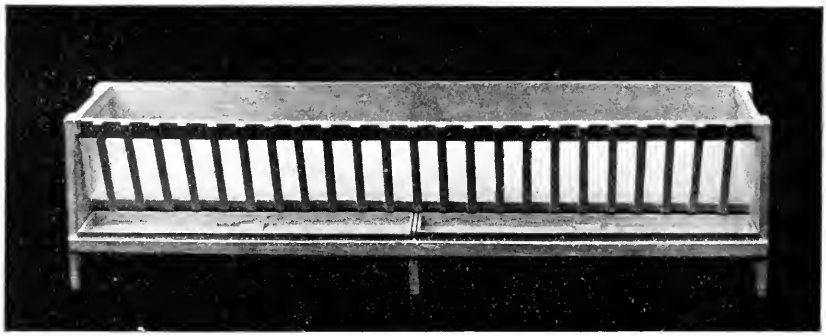
importance of letting them all in at the same time, thereby giving each lamb an equal chance at the feed.



This Shed Can Be Used When Feeding in an Open Lot. It Should be Open to the Sun. It is Inexpensive and Can Be Made in Any Length or Width

Rationing Sheep and Lambs

Great care should be exercised in starting sheep or lambs on feed. Just a sprinkle of shelled corn and oats, or whatever grains are to be given, should be put in the trough for the first week, until all the sheep have taken to the feed, and then it can gradually be increased from day to day. Patience is important, and it generally takes thirty to forty days to get sheep on full feed. It is better to give too little than too much grain, especially during the period of working them on feed. It is really up to the feeder to watch his sheep closely, as no two lots will take to the feed just alike. Weather conditions should be closely watched. On bright, crisp days sheep will take more feed, and in soft, muggy weather the grain ration often has to be decreased. If some get off feed, it is best to separate them from the rest and put them out where they will get rough feed and exercise for a day or so. It is sometimes necessary to take the whole band off grain for a day or so, or greatly



This Combination Hay and Grain Rack Has Several Advantages. Grain Trough Catches Hay Seed and Fine Leaves, Which Sheep Relish. Troughs are Detachable and Can be Removed and Thoroughly Cleaned at Any Time

reduce the grain ration. Grain should always be fed first, succulent feeds next, and then the dry roughage.

In estimating the amount of trough room necessary, 12 inches can be allowed for feeding lambs and up to 18 inches for breeding ewes. It is quite necessary that enough trough space be provided so all can get to it at the same time.

The following table will show the amount of feed to be given daily to a 55-pound to 65-pound feeding lamb over a period of 120 days. This table cannot be followed exactly, as some lambs will take to the feed faster than others, but it is given to show how sheep are gradually placed on feed.

Ration No. 1

Week	Shelled Corn, lbs.	Oats, lbs.	Clover Hay All They Can Eat
1		.10	
2	.20	.15	
3	.40	.25	
4	.70	.20	
5	.85	.10	
6	1.00		
7	1.20		
8	1.30		
9	1.40		
10	1.50		
11	1.60		
12	1.70		
13	1.80		
14	1.80		
15	1.85		
16	1.90		

Ration No. 2

Week	Shelled Corn, lbs.	Oats, lbs.	Corn Silage, lbs.	Alfalfa Hay, lbs.
1	.10	.10	.30	1.50
2	.20	.20	.60	1.30
3	.30	.30	.80	1.20
4	.50	.20	1.00	1.10
5	.70	.10	1.20	1.00
		Cotton Seed Meal, lbs.		
6	.90	.05	1.30	1.00
7	1.00	.06	1.50	.90
8	1.10	.07	1.60	.80
9	1.15	.10	1.75	.70
10	1.20	.12	1.90	.60
11	1.25	.12	2.00	.55
12	1.30	.14	2.30	.50
13	1.40	.15	2.40	.50
14	1.45	.16	2.50	.50
15	1.50	.18	2.60	.50
16	1.60	.20	2.70	.50

Many good feeders will work lambs on full feed much sooner than is indicated in the above table, but the feeder who wishes to accomplish this must watch closely night and morning, so he will note quickly any irregularities and adjust his rations accordingly. I advise anyone, not

thoroughly versed in sheep feeding, to keep before his sheep or lambs at all times all the good, dry roughage they will consume. Then by careful observation the feeder can learn the amount of succulent feeds they will eat, as well as the grain ration required. Of course, during the period of working sheep on full feed, one must be careful not to feed too much grain; but if plenty of good, dry roughage is kept before them, they will do their own rationing to a big extent.

Roughages Compared

The following table taken from "Feeds and Feeding," by Henry, gives the digestive nutrients in various roughages for sheep.

Dry Roughages	Total dry material in 100 lbs., lbs.	Crude protein, lbs.	Carbohydrates, lbs.	Fat, lbs.	Total, lbs.	Nutritive rate 1, lbs.
Clover red, all analysis	87.1	7.6	39.3	1.8	50.9	5.0
Clover alsike all analysis	87.7	7.9	36.9	1.1	47.3	6.4
Clover Monmouth red	81.3	6.4	37.2	1.8	47.6	3.9
Alfalfa, all analysis	91.4	10.6	39.0	0.9	51.6	3.6
Soy bean hay	91.4	11.7	39.2	1.2	53.6	3.0
Cow-pea in bloom, early pod	89.4	12.6	34.6	1.3	50.1	22.7
Corn stover, corn removed, dry	90.6	2.2	47.8	1.0	52.2	21.0
Corn stover, medium in water	81.0	2.1	42.4	0.7	46.1	23.2
Corn stover, light in water	59.0	1.4	31.1	0.6	33.9	27.1
Kafir stover, dry	83.7	1.7	43.1	1.3	47.7	10.6
Red top, all analysis	90.2	4.6	45.9	1.2	53.2	15.2
Succulent Feeds Compared						
Beet pulp, wet	9.3	0.5	6.5	0.2	7.4	13.8
Beet, common	13.0	0.9	9.1	0.1	10.2	10.3
Mangel	9.4	0.8	6.4	0.1	7.4	8.2
Rutabago	10.9	1.0	7.7	0.3	9.4	8.4
Corn well matured, recent analysis	26.3	1.1	15.0	0.7	17.7	15.1
Sorgum	22.8	0.6	11.6	0.5	13.3	21.2
Pea canning refuse	23.2	1.6	11.6	0.8	15.0	8.4

Henry reports test made at the Michigan station on six (6) lots of ten (10) lambs each of a 75 pound average over a period of 98 days to test the value of various roughage.

Each lamb received 1.4 lb. shelled corn and 1.2 lb. rutabagoes together with dry fodder as shown below:

Lot		Daily allowance of dry roughage, lbs.	Av. daily gain, lbs.	Av. total gain, lbs.	Feed Given for 100-lb. Gain: Corn, lbs.	Dry Fodder, lbs.	Roots, lbs.
1	Clover hay	1.2	0.33	32.4	423	362	365
2	Alfalfa hay	1.3	0.35	34.4	395	373	340
3	Millet hay	1.0	0.26	25.8	523	372	453
4	Corn stover	1.4	0.31	30.2	451	462	387
5	Oat straw	1.4	0.29	28.5	478	489	411
6	Bean hay	1.5	0.30	29.6	463	488	395

Alfalfa hay in this trial proved slightly superior to clover hay. Millet hay gave poor returns. Corn stover, cut into 1.5 to 3 in. pieces with a silage cutter, made nearly as large daily gains as Lot 1 fed clover hay, and consumed only a little more grain. This shows good stover has a high value for lambs. Oat straw did not prove equal to alfalfa or clover hay, still did very well and made economical gains. It is added, however, that the good showing made on corn stover and oat straw was made possible because roots were fed with them. Author's note, "Good matured corn silage would take the place of roots."

Advantages of Agricultural Stations

The average farmer I am sure does not realize the great opportunities and advantages that rightfully belong to him, such as the excellent State Agricultural Colleges, the Department of Agriculture at Washington, and other sources of information. Almost any kind of information the farmer or feeder may need can be had by applying to these institutions. Feeding tables, the values of his different feeds, diagrams for farm buildings, feed troughs and the like can be had, if not at one place, then another, free for the asking. I wish also to say that if the reader wants a more detailed work on feeds and feeding, there are several books that are very good.

Kinds and When to Buy

If the reader has in mind buying lambs early in the fall to be run through on green feed and roughage until January or February, and then placing them on feed for the late spring market, he should buy light 40 to 50 pound lambs, thin in flesh, so they will not become too heavy for desirable weights when fat. Generally, however, men who feed for the late winter and spring months buy their stuff in October, November and December. If possible, they buy stuff direct from the range, but during November and December there are always a great many sheep and lambs dumped on the market from the corn belt states that are fleshy, and just right for a 60 to 90 day feed. These sheep or lambs, in most instances, are all right and will do fine. There are also feeders who watch the market closely, and during the early winter months buy half fat and pretty good lambs, put them on a good hay and grain ration and finish them in 30 to 60 days, getting a big gain and raising the quality in value possibly $2.00 to $3.00 per hundred weight.

Shearing and Marketing Clipped Lambs

Later, towards spring, still another class of operators come on the scene. They buy lambs or sheep, generally lambs, that will shear a good fleece of wool. They sometimes buy range hay-feds that are generally pretty fleshy, but not quite good enough for the killers, or lambs made pretty fat on hay and grain, but maybe impossible to finish because of ticks or lice, because they were not dipped in the fall. We call these men the shearers. They shear these lambs in March and April, and send them back as clipped lambs in April, May and June. These men are generally our best feeders, and here again is where the

Michigan type of feeder is a big operator. Taking a heavy coat of wool from a lamb, and along with it his unwelcome companions, and placing him on a choice hay and grain ration, he gains very fast, often putting on the weight of his fleece in two or three weeks time. These men also play for a raise in the market, for it is during April, May and June that we have the most meager receipts, therefore highest prices.

There are a few farmers who make it a business of buying light lambs in the fall, and running them through the winter on cheap roughage, feeding a little grain late in the winter, shearing early in April and turning out on the grass. This system is not successful, unless a grain ration is given with the grass. I would also caution the young feeder regarding feeding sheep or lambs on grass in the early spring. Grass at that time is not very nutritious, and sheep or lambs turned on this kind of feed soon flesh up and may look pretty fat, but the flesh is soft. Shipping such fleshed stuff to market, a heavy shrink is certain, and often an owner will hardly know his own stuff. The flesh must be made hard and firm, and grass alone will not do it.

Sheep Fattening in Great Britain

From some published sheep feeding trials in Great Britain, numbering 194, Henry, a noted authority on feeds, selects the following examples to show the rations used by the British farmers for fattening sheep. Mr. Henry reports that it is noted in these various reports that clover hay proved extremely useful, not only because of its nitrogenous matter, but also because of its high content of lime, compared with phosphoric acid. Linseed cake produced a given increase with less than the average amount of feed, and the carcasses dressed above the average. Cotton cake gave the average results. Oats on the whole were unsatisfactory for producing fat. Barley was satisfactory, unless used in large quantities, when it seemed to have an injurious effect. Wheat gave good results. Malt showed little or no superiority over barley. Dried brewers' grains and dried distillers' grain proved very satisfactory. Mangels gave better results than sweeds, and stored sweeds gave better results than frosted sweeds. The best results followed feeding from 95 to 100 pounds of roots weekly per 100 pounds of live sheep. While the English farmer gets good results from feeding large quantities of roots, the American farmer had best limit the root ration to from 4 to 5 lbs. per head daily and even less.

Rations Used in Great Britain in Fattening Sheep and Lambs

No. of Animals	Length of feeding period, days		Average ration, per head, lbs.	Average wt., lbs.	Av. daily gain, lbs.	Av. total gain, lbs.
20	102	Linseed cake	0.3			
		Barley	0.3			
		Clover hay	0.4			
		Sweeds	22.9	128	0.43	42
10	108	Linseed cake	0.7			
		Molasses	0.1			
		Clover hay	2.1			
		Wheat straw	0.3	130	0.24	27
8	121	Cotton cake	1.6			
		Hay	1.0			

		Roots 15.0	132	0.33	41
10	60	Corn 0.6			
		Oats 0.4			
		Sweeds 14.8	108	0.32	14
10	35	Cotton seed cake..... 0.6			
		Dried distillers grain..... 0.4			
		Turnips 15.0	109	0.29	10
19	105	Corn 0.7			
		Hay 0.5			
		Sweeds 11.5	97	0.33	35
18	105	Linseed cake 0.7			
38	93	Bombay cotton cake..... 0.3			
		Sweeds 12.8	99	0.36	37
		Dried distillers grain..... 0.3			
		Hay 0.4			
		Sweeds 16.3	119	0.40	36
15	72	Cotton cake 0.3			
		Corn 0.3			
		Clover hay 0.8			
		Sweeds 13.0	61	0.19	14
19	105	Hay 0.7			
		Sweeds 15.3	91	0.21	22

The almost universal feeding of oil cake and roots in great quantities to fatten sheep by the British farmer is shown in this table.

Yield and Dry Matter Per Acre in Various Root Crops

Through the corn belt region and among the larger class of farmers, corn ensilage is no doubt cheaper, labor considered, than are roots. But in cooler climates, where the season is not long enough for corn to mature, roots can be grown, and make excellent sheep feed. Roots are especially attractive to the small farmer, where every square rod of ground must produce to its limit. The following table, given by Henry, will show the yields of the various root crops per acre.

	N. Y. (Cornell) Station		Ontario Agr. College	
	Green Wt. Tons	Dry Matter Lbs.	Green Wt. Tons	Dry Matter Lbs.
Mangels 39.7		8,400	23.7	4,440
Sugar mangels 28.1		6,400	24.0	5,460
Sugar beets (swedes).....28.3		8,000	14.9	4,890
Rutabagas 26.3		5,000	19.6	4,260
Hybrid turnips 27.1		5,200	....	....
Turnips 16.8		3,600	27.2	5,160
Carrots 18.5		4,400	27.5	6,460
Parsnips 8.3		3,800	8.3	2,750
Kohlrabi 23.4		4,600	15.8	2,819
Cabbage 36.4		4,600	23.1	4,102
Dwarf Essex rape..... ...		....	17.2	5,758
Thousand headed kale..... ...		....	17.7	4,000
Potatoes ..... 6.0 (200 bushels)		2,540	6.0	2,540

Questions and Suggestions

The writer will be glad to answer questions asked by anyone in reference to raising, feeding or handling sheep, or how best to utilize any class of green feed, the amount of grain ration required to go with

it to produce a finished article; also the relative value of any one feed or class of feed will be furnished on request.

In my endeavor to assist the layman to diagnose and solve his problem I will set forth the following questions, which should be read over carefully and answered correctly, otherwise, of course, the advice given might be wrong. The feeder should state how sheep or lambs have been handled during the six months, or time they have been in present owner's possession.

Do you like sheep?

How many sheep have you?

State kind, age and breed.

Ram grade or pure blood?

How much pasture and how divided?

How long have sheep been on this pasture? State kind, wild or tame, woods or prairie, high or low land, also give names of different kinds of grasses or weeds.

Water, state whether creek or tanks, and if tanks, how high are sides and can the sheep drink out of them? Pure or dirty?

Salt, is it kept before them all the time?

Fences, good or bad; can sheep crawl through them and injure themselves?

Are dogs chasing or killing your sheep?

Are ewes and bucks running together or separate?

Are ewes with lamb, or are lambs running at their sides?

Lot dry or muddy?

How about shelter and bedding?

Barn or shed dark or light, dry or damp, and how ventilated?

Are sheep allowed to run with colts, calves or other mischievous animals?

What constitutes your roughage? State fully grade, quality and kind, also whether they have free access to it, or it is rationed to them.

Do your sheep get timothy hay? They should not.

What grain? State kind, quality, quantity, whether rationed or fed in self feeders.

Do different men feed the sheep or lambs from day to day?

Is anyone allowed to go among sheep that are being fattened for market?

Several of These Salt Troughs Should be Scattered Through the Pasture

Are your sheep penned or housed at night?

When were they dipped last, and how many times.

When tagged or dung clipped from around their tails? Maggots may collect if this is not attended to.

Are they allowed to run in fields or pastures where there is high grass, weeds and the like on rainy, stormy days?

Are your sheep kept on closely cropped pastures during hot summer months?

How long do you keep them on each pasture at a time?

How about shade?

How often do you count and weigh your sheep?

Are your ewes all giving a good flow of milk?

Is she owning her lambs and allowing them to suckle?

Are her teats in good shape, or are the lambs biting them?

Do you shear before or after lambing?

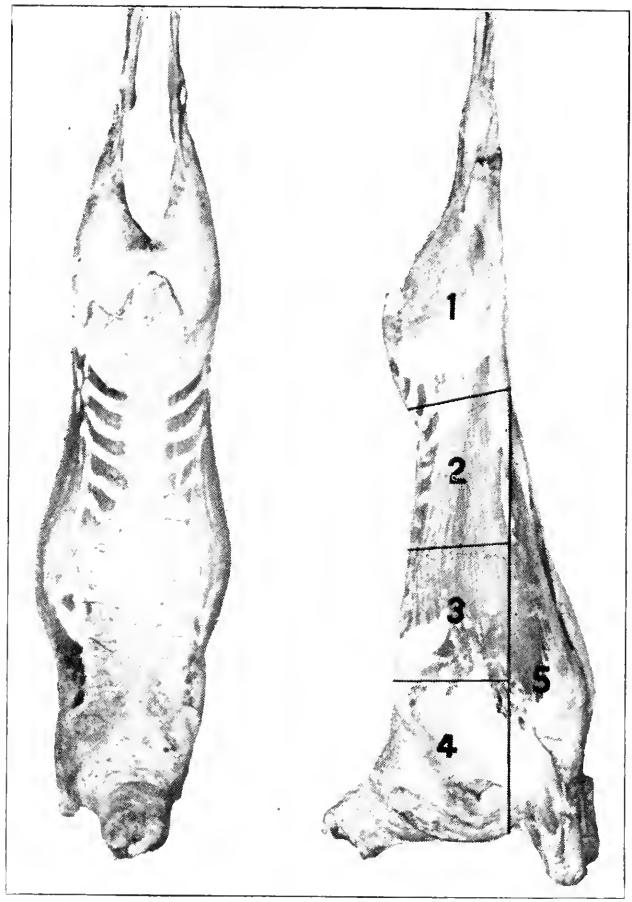
Have you handled your sheep recently to ascertain whether they are fat?

Do you know how to tell a fat sheep?

Are sheep a major part of your business?

Are your sheep that you are preparing for market gaining three-eighths to one-half pound each daily?

Did you read this book over carefully?



A GOOD CARCASS

No. 1 shows the leg, used as a roast. No. 2 is the loin and No. 3 the ribs. These two cuts furnish chops that are best broiled or roast for the oven. No. 4 is the shoulder, from which may be cut a few chops, a stew from the neck and a shoulder that may be opened and rolled into a very choice roast. No. 5 is the breast, best used for stew, but a possible roasting piece.—Courtesy Illinois Agricultural College.

CHAPTER V

PREPARING AND SERVING MUTTON AND LAMB FOR THE TABLE

The Producer Should Boost His Own Business

THROUGH many rural districts, and even in good sized towns through the Central and Western states, it is almost impossible at this time to get an order of mutton or lamb served, when ordered, at the average hotel. The farmer's wife, although she may be a very proficient cook, seldom knows how to prepare mutton or lamb so it is appetizing.

Not long ago I asked a traveling man if he ordered mutton or lamb when in the country districts, and he replied: "No, I do not, for I have learned better. There is as much difference as day and night in the ways it is served to you. There is no food more delicious, when it is properly cooked, seasoned and served, but deliver me if the chef does not know his business."

Such a state of affairs is a crime committed against the sheep business, and the following remarks and recipes furnished by the United States Government are offered in the hope that they may help to bring mutton and lamb into more general favor.

PALATABLE AND NUTRITIOUS FOODS

Mutton has from early times been a popular food both in the Orient and among western nations. The ease with which the sheep is raised and the fact that its flesh is not, like some other meats, excluded on religious grounds from the dietary of any large group of people, combine with its palatability to bring it into widespread favor. The terms "lamb" and "mutton" are somewhat loosely used to designate the meat obtained from the younger and older animals. In some localities mutton is used to apply to the flesh of all but young lambs; in others its use is limited to the flesh of full-grown sheep. The latter is perhaps the commonest usage in the United States.

The preference for lamb or for mutton, like the use of the terms, varies with the locality. Of late years a preference for lamb to older mutton has been noticeable, particularly in the United States. In England, on the other hand, mutton has always been more commonly used. The popularity of one or the other will probably always be determined by taste, fashion, or market conditions, for both are palatable and nutritious foods.

The general belief that mutton and lamb are wholesome has been strengthened recently by such work as that of the United States Department of Agriculture, whose reports of meat inspection show that it has been necessary to reject relatively few mutton carcasses as unfit for food, and that the sheep is particularly free from diseases which render meat undesirable.

PREPARING AND SERVING MUTTON AND LAMB FOR THE TABLE

Relative Economy In the Use of Mutton

While mutton and beef do not differ materially in percentage composition or digestibility, mutton has an advantage in that it is capable of somewhat more economical use. The mutton carcass, unlike the beef carcass, is of such size that a quarter

or a half, either of which supplies a variety of cuts, can be conveniently utilized in a household of moderate size with ordinary refrigerating facilities, and the price per pound is commonly less when the meat is bought in this way. There is a certain advantage, too, in the fact that the leg, which has the smallest percentage of waste of any of the cuts of mutton, is of suitable size for family use, for a piece of meat which has not been cut up keeps better than one which has been cut. On the other hand, the rather general belief, which, however, seems unfounded, that all kinds of mutton fat are unsuitable for culinary purposes, has tended somewhat to an uneconomical use of this meat.

How to Flavor and Utilize Mutton Fat

One of the most satisfactory methods found is to mix some leaf lard with the suet and render with milk. The suet and leaf lard mixture is finely divided by passing it through a meat grinder, and then heated in a double boiler with about one-half of its weight of whole milk. The fat can quickly be released from the tissues, and, when allowed to cool, forms a cake on the surface of the liquid, which is easily removed. Mutton suet and leaf lard, fresh and of good quality, "tried out" in this way, possesses little, if any, of the characteristic mutton odor and flavor. The best results are obtained with a mixture of two parts of mutton suet and one of leaf lard, finely ground, and rendered with whole milk in proportion of ½ pint to 2 pounds of the mixed mutton and lard. This fat has an exceptionally good odor and flavor, which it will retain when kept for weeks in an ordinary refrigerator. It is also of good color and texture, being softer than the mutton fat alone, owing to the milk fat and lard which it contains. If such fats are rendered in an open kettle, a moderate heat is desirable, since they "burn on" very readily. Rendering in a double boiler is much more convenient.

Another way of utilizing mutton fat for frying and other culinary purposes is in the form of savory fat, similar to that made from beef drippings and other fats. For each pound of the carefully rendered mutton fat, allow an onion, a sour apple, and a teaspoon of ground thyme or mixed herbs tied up in a small piece of cloth. Cook these in the fat, at a low temperature in the oven or on top of the stove, until the onion and apple are thoroughly browned. Then strain off the fat, which will be found well seasoned and may be used in place of butter or other savory fat for seasoning or for warming of potatoes, cooking vegetables, and in other ways.

CARE OF MUTTON IN THE HOME

Because of the facility with which mutton absorbs odors and flavors, special care should be taken of it in the home. When it comes into the house, it should be wiped thoroughly with a damp cloth, and all portions that have the slightest unpleasant odor about them should be cut off. Such portions are most likely to be found where the layer of meat is thin as, for example, on the lower end of the leg, on the flank, or on the ribs. When a large piece of mutton is bought, these facts should be kept in mind in determining which parts should be used first. It is well, for example, to remove the flank end of the loin and part of the rib bones first, and use them for soups or stews. **The removal of the membrane and the red skin from the surface of the meat before it is cooked is also desirable.** In roasting mutton, many housekeepers believe that it is well to keep the meat well up from the pan by means of a rack, for if this is not done the fat of the meat is likely to become scorched and to affect the flavor of the meat itself.

METHODS OF COOKING MUTTON

In the following pages are given a large number of recipes which have been brought together from many sources. Most of them are for standard dishes. Some of them, however, are for dishes which, though highly esteemed in other countries, are not well known in the United States, and a few are for rather complicated dishes. The insertion of these recipes for unfamiliar and elaborate dishes should not be taken to indicate that a greater value is placed upon them than upon mutton prepared by the simple methods of boiling, roasting, or broiling. They are included because tests have shown them to be palatable, and because a knowledge of many ways of preparing any given food is an easy way of securing variety in the diet. More necessary than to know how to prepare mutton in a variety of ways is to keep in mind the

essential factors which contribute to its satisfactory preparation in simple ways, i. e., the careful removal of all portions having an unpleasant odor, the mastery of the art of preparing well a simple gravy, and care to keep hot such dishes as are intended to be served hot.

Even if we recognize the advantage of simple methods skillfully followed out over complicated methods, we must recognize also that if a greater number of modes of preparation were understood in this country and if a greater variety of savory sauces were used the possibilities of serving mutton in acceptable forms would be greatly increased.

That quality of mutton which makes it absorb odors and flavors easily is an advantage in cooking, for its own flavor combines easily with that of the various seasonings in cooking, and, for this reason, the meat yields itself readily to the preparation of savory dishes. The experience of cooks has, in fact, taught two general ways of cooking mutton, one of which consists in developing its own flavor by cooking it alone, and the other in uniting it with highly seasoned vegetables or other substances in such a way as to modify its flavor and to produce a new flavor by the combination. The two methods are well illustrated by recipes for boiling mutton. The first of these directs that it be cooked in water unseasoned by other substances than salt; the second, that such substance as herbs, onions, or garlic be rubbed into the meat and bound closely to its surface by means of a cloth before the meat is put into water.

METHODS OF MEASURING

The measurements in all cases are level. A teaspoonful of an ingredient, for example, means enough to come up to the edge of the bowl of the spoon. Such an amount is conveniently measured by first taking up more than is needed and then pushing off any in excess by means of a knife, allowing the edge of the knife to rest on the spoon.

MAKING OF SOUPS AND BROTHS

An object to be kept in mind in the making of broths and soups is to get as much as possible of the flavoring bodies and of the nutritive material of the meat into solution or suspension in the water. This is accomplished, first, by dividing the meat into small pieces in order to increase the surface exposed, and, second, by keeping the temperature low in order to prevent the proteid from coagulating. When the water in which the meat has been soaked is brought to the temperature of about 52° C., the dissolved proteids begin to harden and rise to the surface in the form of scum. This scum is often removed for esthetic purposes, but it should be remembered that the effect of doing this is to reduce the nutritive value of the broth. Whenever there is the slightest doubt about the quality or the freshness of the meat, however, the removal of the scum is recommended, for under these circumstances its removal seems to improve the flavor.

Mutton Juice and "Extract"

Mutton juice or "extract" may be prepared according to any of the ways recommended for beef juice or homemade "extract." One way is to broil a piece of the meat on both sides, and then cut it into small pieces and extract the juice, for instance, by pressing it with a lemon squeezer or between two plates with a heavy weight on top. The object of broiling has usually been said to be "to start the flow of the juice." A less concentrated extract is made by cutting the meat into small pieces and cooking it in water with the precaution mentioned above—that of keeping the water below 130 F. This is most conveniently done in a double boiler or in a glass fruit jar immersed in water.

Mutton Broth

3 pounds mutton from the neck.
2 quarts cold water.
3 tablespoons rice or barley.
1 teaspoon salt.

Wipe the meat, remove the skin and fat, and cut the meat into small pieces. Put into the kettle with bones, and cover with the water. Heat gradually to the boiling

point and season with salt and with pepper if liked. Cook slowly until the meat is tender, strain, and remove the fat. Reheat to boiling point, add the rice or barley, and cook until the rice or barley is tender. If barley is used, soak it over night in cold water.

Mutton Soup

4 pounds mutton from the neck.
3 quarts cold water.
3 carrots.
2 turnips.
1 small cabbage or part of a larger cabbage.
1 stalk celery.
Few sprigs parsley.
1 medium-sized onion.
6 cloves.
1 sprig thyme.
1 sprig marjoram.
2 tablespoons salt.

Wipe the meat carefully, cut into small pieces, and cover with the water. Bring very slowly to the boiling point and skim. Add the vegetables cut into small pieces and other seasoning, and cook slowly for three hours. Strain, cool, and remove the fat. Serve either clear, with rice, or with the vegetables finely chopped.

MUTTON STEWS

In preparing mutton for stews, several different plans may be followed. The meat may be cut into small pieces and cooked in water, or it may be first browned in fat before being cooked in water. Another way is to mince the raw meat, cook in a little fat, and then combine with vegetables. This is suitable when the vegetables used are very juicy as in Minced Mutton with Eggplant.

Scotch Broth

1 quart rich mutton broth free from fat.
1 carrot.
1 turnip.
2 onions.
4 stalks celery.
2 tablespoons butter or mutton fat.
2 tablespoons flour.
Salt.

The liquor in which mutton is boiled may be used in preparing this dish, but it will usually need to be boiled down. Cut the vegetables into small pieces and cook them slowly in the stock for two hours. Rub the flour and butter together and add to them a little of the hot broth. Stir until the mixture is smooth, then add it to the broth.

When no mutton stock is on hand, prepare it from 2 pounds of mutton from the forequarter. Remove the meat from the bone and cut into small pieces and, for convenience, tie the bones in a small piece of cloth and cook in the same water in which the meat is cooked. In this case, serve the meat with the broth.

Ragout of Mutton With Farina Balls

1½ pounds neck of mutton cut into small pieces.
1 tablespoon butter.
1 tablespoon flour.
1 onion cut into small pieces.
1 carrot cut into small pieces.
2 cups hot water.
1 teaspoon salt.
¼ teaspoon pepper.
¼ bay leaf.
1 sprig parsley.
6 cloves.
1 cup fresh peas or ½ can peas.

Put the butter into a frying pan. When melted add the flour and let it brown. Then add all the other ingredients except the peas, and cook slowly for two hours. A short time before serving, add the peas.

Serve with farina balls made as follows:

1 cup farina.
1 cup milk.
¼ teaspoon salt.
⅛ teaspoon pepper.
Few drops onion juice.
Yolk 1 egg.

Cook farina and milk in the double boiler one hour. Add seasonings and well-beaten yolk. Stir well and cool. When cold, roll into balls. Dip in egg and crumbs and fry in deep fat. Rice may be used in a similar way.

Ragout of Mutton With Summer Squash

2 pounds mutton from the shoulder or breast.
1 onion.
1 medium-sized summer squash.
1 sweet green pepper.
2 stalks celery.
4 medium-sized potatoes.
¼ teaspoon powdered thyme.
¼ teaspoon powdered marjoram.
Bit of bay leaf.
Garlic. (See below.)
Salt.

Cut the meat into small cubes and place in a deep baking dish. Cook in a hot oven until well browned. Add the onion cut into cubes, the summer squash sliced, sweet peppers and celery cut into small pieces, and the other seasonings. Sufficient flavor of garlic will be obtained by rubbing the dish with a clove of garlic or by adding a very thin slice from one of the cloves. Cover the dish and allow the vegetables to cook for an hour with the meat, without the addition of water. Then add the potatoes, cut into slices. Cover the dish again and cook for another hour.

Ragout of Mutton With Eggplant

Follow the directions given in the above recipe, substituting an eggplant for the summer squash.

Syrian Stew

2 cups raw mutton cut into cubes.
2 tablespoons fat.
3 tablespoons flour.
2 cups string beans.
2 onions.
2 cups tomatoes.
Salt.
Water.

Dredge the meat with the flour and brown it in the fat. Put all the ingredients in a stewpan, scraping from the frying pan all of the flour and fat, and add enough water barely to cover. Cook slowly until the meat is tender.

Haricot of Mutton

2 tablespoons butter or drippings.
2 tablespoons chopped onions.
1½ pounds lean mutton cut in 2-inch pieces.
2 cups water.
Salt and pepper.
Lima beans.
Chopped parsley.

Fry the onions in the butter, remove the onions, add the meat, and brown; cover with water and cook until the meat is tender. Serve with a border of Lima beans, seasoned with salt, pepper, butter, and a little chopped parsley. Fresh, canned, dried, or evaporated Lima beans may be used in making this dish.

Stewed Sheep's Hearts

2 sheep's hearts.
2 ounces fat salt pork.
2 tablespoons minced onion.
2 tablespoons flour.
¼ teaspoon pepper.
1½ pints boiling water.
Salt.

Split and wash the hearts. season them with the salt and pepper, and roll them in the flour. Try out the pork, and add the onions to the pork fat and cook them 10 minutes. At the end of that time, remove the pork and onions to a stewpan and fry the hearts in the fat. Transfer hearts to the stewpan. Rinse the frying pan with the water, which should then be poured over the hearts. Use the flour that remains after the hearts are rolled to thicken the

broth. Cook the hearts in the gravy for three hours, being careful to keep the temperature just below the boiling point. At serving time, the hearts are usually sliced and the gravy poured over them.

Sheep's Tongues

6 sheep's tongues.
2 carrots cut into small pieces.
1 pint boiling water.
1 large onion cut into small pieces.
2 slices bacon.
¼ cup capers.
3 small cucumber pickles.
Salt and pepper.

Scald and blanch the tongues, removing the skins and then throw the tongues into cold water until ready to use. Cut a slice of bacon into fine strips and lay them in the bottom of a saucespan; place over this the lamb tongues seasoned with salt and pepper, and over the tongues another layer of bacon in very fine strips. Add the minced carrots and onion; salt and pepper again to taste and let the tongues simmer for about 15 minutes, and then moisten with about a pint of boiling water or broth. Cook slowly about three hours. Then take out the tongues, place them on a hot dish, strain the sauce, reheat, and add one-fourth cup of capers and three small cucumber pickles, sliced thin. Stir well and let the sauce boil up once. Pour over the tongues and serve.

Boiled Leg of Mutton

After wiping the meat thoroughly with a damp cloth cover it with water which, if haste is an object, should be hot. Cook about 15 minutes for each pound, keeping the temperature a little below the boiling point. The proper temperature will be indicated by a slight bubbling. When the meat is partly done, add the salt and water.

Boiled Mutton With Vegetables

To the water in which a leg of mutton is boiled the following may be added:

2 sliced carrots.
1 sliced turnip.
2 sliced onions.
2 stalks celery.
1 bay leaf.
2 cloves.

The advantage of using these additional substances is that besides flavoring the meat and making an attractive garnish for it, they add flavor to the broth and thus improve it for use in soups or sauces.

Boiled Mutton With Sweet Herbs

After the leg of mutton has been wiped, mix the following and spread over the surface. Wrap the meat in a cloth and fasten the cloth about the meat by means of a cord or skewers in order to hold the seasonings close to the surface:

1 clove of garlic, finely chopped.
1 finely chopped onion.
1 teaspoon powdered thyme.
1 teaspoon powdered sweet marjoram.
1 teaspoon salt.

Boiled Mutton With Oyster Sauce

4 pounds mutton from the shoulder.
1 onion.
1 pint oysters.
Salt.

Bone the mutton and stuff with half the oysters, or make a gash in the meat near the bone and insert half the oysters and tie into shape. Half cover the meat with water and cook in a closely covered dish for 2 hours. With the remaining oysters make the following sauce:

Oyster Sauce

2 tablespoons butter or mutton fat.
1 tablespoon flour.
½ pint oysters.
½ cup of the liquid in which the mutton has been boiled.

Drain the oysters and heat and strain the liquor. Wash the oysters, add them to the hot oyster liquor and cook until they are plump. Remove the oysters and keep warm while making a sauce of the butter, flour, oyster liquor, and mutton stock. Add the oysters and season with salt and pepper.

Steamed Mutton

Small pieces of mutton may be very satisfactorily prepared by covering the surface with powdered or finely chopped seasonings, as suggested in the foregoing recipe, and steaming it, or it may be steamed without the seasonsings.

Sauces for Boiled or Steamed Mutton

Caper Sauce

⅓ cup butter or mutton fat.
1½ cups hot water or mutton broth.
2 tablespoons flour.
½ teaspoon salt.
½ cup capers drained from their liquor.

Melt half the butter or all the mutton fat, add the flour, and cook thoroughly. Pour the hot water or stock on gradually. Before serving, add the remaining butter (if this is the fat used in preparing the dish) and the capers. If the gravy is made somewhat thicker than as above directed it can be spread over the surface of the meat. This covers any irregularities in the surface and is thought by some people to improve the appearance of the dish.

Mock Caper Sauce

For the capers in the above recipe, chopped sour pickles may be substituted.

Parsley Sauce

2 tablespoons butter or mutton fat.
2 tablespoons flour.
1 cup milk or mutton broth.
Salt.
Juice of ½ lemon.
1 tablespoon finely chopped parsley.

Melt the butter, add the flour, and cook for two or three minutes, stirring constantly. Add the milk and cook until the liquid is thickened. Season with salt. Just before serving add the lemon juice and parsley.

Horse-Radish Sauce No. 1
(For Cold Boiled Mutton)

2 tablespoons cracker crumbs.
2 tablespoons butter or mutton fat.
¼ cup grated horse-radish root.
½ teaspoon salt.
1 cup milk.

Cook the crumbs, horse-radish, and milk 20 minutes in a double boiler. Add the remaining ingredients and serve either hot or cold.

Horse-Radish Sauce No. 2

⅓ cup thick cream.
3 tablespoons grated horse-radish root.
1 tablespoon vinegar.
Salt and cayenne.

Whip the cream and add the other ingredients.

Mutton Savory Loaf

2 pounds lean mutton free from bone.
2 pounds lean fresh pork free from bone.
1 small onion.
1 green pepper
2 stalks celery.
1 bunch parsley.
1 cup milk.
2 eggs.
½ teaspoon each curry powder, powdered thyme, black pepper, and paprika.
1½ tablespoons salt.
1 pound bacon sliced very thin.

Remove the seeds from the pepper and put the vegetables and meat through a meat grinder, using the finest chopper for the vegetables, and chopping the meat about as fine as for Hamburg steak. Mix thoroughly all the ingredients but the bacon. Form the chopped meat mixture into a roll about 2 or 3 inches in diameter; cover the sides and ends completely with the bacon, roll in a pudding cloth or a piece of cheesecloth, and tie securely. This can be conveniently done by laying the cloth on a flat surface, and then laying the strips of bacon upon it side by side in such a way as to form a continuous layer large enough to cover the whole surface of the meat roll. Put the meat roll in the center, and bring the bacon up around the sides and ends. The cloth should be tied securely at the ends, and either pinned or sewed securely at the side. Boil for three hours in just enough water to cover, to which has been added one tablespoon of salt and one-half cup of vinegar. This may be served cold or may be cut into slices and fried. This mixture may also be either steamed in a mold or baked. If this is done, the bacon should be used to line the mold and cover the top of the mixture. If baked, it is well to add to the meat mixture a cup of bread crumbs and one-half cup of milk.

For the fresh pork in the above, either an equal amount of ham, veal, or a mixture of veal and salt pork, may be substituted. When ham or salt pork is used reduce the amount of salt.

Braised Leg of Mutton

1 leg mutton.
½ medium-sized onion.
1 carrot.
1 turnip.
½ bay leaf.
1 sprig each thyme and parsley.
¼ cup mutton drippings or butter.
1½ teaspoons salt.
12 peppercorns.
3 cups hot water.

Have the leg of mutton boned. Wipe, stuff with the mixture described below, sew, and place in a deep pan. Cook the onion (sliced), the carrot and turnip (cut into dice), bay leaf, thyme, and parsley five minutes in the butter or mutton drippings. Add the hot water, salt, and peppercorns, and pour the mixture over the mutton. Cook slowly for three hours, with the dish covered except for the last half hour. Make a brown gravy out of the strained broth in which the meat has been cooked.

Stuffing for Braised Leg of Mutton

The stuffing for the braised leg of mutton is made as follows:

1 cup cracker crumbs.
2 tablespoons melted butter.
¼ teaspoon salt.
⅛ teaspoon pepper.
½ teaspoon poultry seasoning.
¼ cup boiling water.

Oven Pot Roast

3 pounds mutton from the shoulder.
1 cup potatoes cut into small pieces.
1 cup carrots cut into small pieces.
¼ cup sliced onion.
2 tablespoons flour.
Salt.

Put the meat into an earthenware bean pot and cover with boiling water. Place the cover on the pot and let the meat cook in a moderate oven for two hours. Add the vegetables and the salt, cover again, and cook for one hour. Redcce the liquid in which the meat and vegetables have been cooked to one cup cup and thicken with the flour.

Shoulder of Mutton Braised With Turnips

6 pounds mutton from the shoulder.
1 onion.
1 carrot.
1 stalk celery.
4 cloves.
½ bay leaf
1 quart water.
6 turnips.
Salt.

Cut the onion, carrot, and celery into small pieces and put these with the shoulder of mutton into a deep baking pan. Cover, and allow the mutton juice to permeate the vegetables and brown with them. Then add the water, cloves, and bay leaf. Cook in a moderate oven until the meat is tender, which will be about 20 minutes for each pound. One hour before serving, add the turnips, which have beeen peeled and parboiled.

Braised Breast of Mutton

1 breast mutton.
Few slices bacon.
½ pint stock.
1 lemon.
1 onion.
Salt.

Line the bottom of a casserole or other earthenware baking dish with a few thin slices of bacon, lay the mutton on these, and put over it the lemon, which has been peeled and cut into slices. Cover with one or two more slices of bacon and add the stock and onion. Cover the dish. Cook slowly on the top of the stove or in the oven until the meat is tender.

Mutton Smothered In Tomatoes

1½ pounds mutton steak.
1 cup bread crumbs.
1 small onion.
Poultry seasoning.
Salt.
1 can tomatoes, or 1 quart fresh tomatoes cut in slices.

Spread over the mutton steak a layer of bread crumbs mixed with the minced onion and other seasonsings. Roll and tie into shape. Place in a casserole or other dish with a tightly-fitting cover. Pour the tomatoes over the meat and cook very slowly in the oven or on top of the stove for three or four hours. If the tomatoes do not cover the meat, add a little boiling water.

Braised Leg of Mutton With Sour Gravy

1 leg of mutton.
2 tablespoons butter or drippings.
3 cups vinegar.
3 cups water.
½ teaspoon each of powdered thyme and marjoram.
½ dozen cloves.
1 clove of garlic.
½ cup each of celery, carrots and onions finely chopped.
2 tablespoons chopped parsley.
1 dozen peppercorns.
½ bay leaf.
1 pint sour cream.
½ pint stock.
Salt.

Fry the celery, carrots, and onions in the fat until light brown, add the vinegar and water, and cook until the vegetables are soft. When this mixture is cool, pour over the leg of mutton, which should be fully covered and which, for this reason, should be in a dish just large enough to hold it. Allow the mutton to lie in this mixture for 24 hours. Upon removing it, drain quite dry and bake in a moderate oven for 30 minutes. Then pour the sour cream and stock around it and cook until tender, basting frequently. Reduce the liquor in which the meat has been cooked to a small volume, strain it, and pour over the meat.

ROASTED MUTTON

The term "roasting" was originally applied to cooking before an open fire, but as now used it is usually synonymous with baking. Since meat cooked by this process is subjected to dry heat, even greater precautions must be taken to prevent the escape of juices than in boiling. The oven should be very hot until the meat is thoroughly seared; then the temperature should be reduced and the fat which drips from the meat should be frequently poured over its surface.

Roast Leg or Saddle of Mutton

Sprinkle the meat with salt and pepper, place upon a rack in the baking pan,

and dredge with flour. Bake in a hot oven, basting frequently. Allow from 10 to 15 minutes per pound, depending upon whether it is desired well done or not.

Brown Gravy for Roast Mutton

In making gravy for roast mutton or any other roast meat, allow 2 level tablespoons of fat for each cup of gravy desired, pouring off any in excess of this amount. To the fat add 3 tablespoons of flour and cook thoroughly, browning it, but being very careful not to burn it. Add boiling water or broth and boil for a short time, stirring constantly. Add salt and pepper. The proportions are 2 tablespoons of fat, 3 tablespoons of flour, and 1 cup of water or stock. If the flour is not browned, only 2 level tablespoons are needed for each cup.

Currant-Jelly Gravy

A gravy flavored and made acid with currant jelly is often served with roast mutton. To each cup of brown gravy made from the fat of roast mutton add a glass of currant jelly or less. The addition of currant jelly is specially suitable when cold mutton is to be warmed up in gravy.

Mint Sauce and Mint Jelly

¼ cup finely chopped mint leaves.
1 tablespoon powdered sugar.
½ cup vinegar.
½ teaspoon salt.

Combine the ingredients and let the mixture stand in a warm place until the flavor of the mint has penetrated the liquid.

Mint sauce, which is so generally relished with roast mutton and roast lamb, may be made from either the fresh or the dried spearmint. Mint jelly, which is also popular, can be made by stiffening mint sauce with gelatin. For this purpose one-half tablespoonful of gelatin soaked in cold water enough to cover it may be used with a cup of mint sauce made as above from freshly chopped mint leaves; or make a mint sauce by boiling together one cupful each of vinegar (not too strong) and sugar for about five minutes and adding three-fourths cupful finely chopped mint leaves and one-fourth teaspoonful of salt and a very little cayenne. To this add one and one-fourth tablespoonfuls granulated gelatin which has been softened in a little cold water. Cool the mixture and stir until it begins to thicken and then pour it into small molds or glasses. The amount of mint may be increased if a stronger flavor is liked. This jelly can be kept only a short time.

Mint jelly is also made by flavoring apple jelly with green mint leaves. Two pounds of apples cut in quarters are cooked with water to cover until soft, as for ordinary jelly, and three cups of green mint leaves and tops are added about 10 minutes before the cooking is completed. To the juice drained from the apple and mint, three-fourths of a cupful of sugar and the juice of a large lemon are added, and the jelly is cooked until a little tested on a cold plate will harden. It is then strained into hot jelly glasses.

Housekeepers commonly tint jelly made by either method with a little vegetable green coloring matter.

Leg of Mutton Stuffed and Roasted

For this purpose have the leg of mutton cut into two pieces and use the thicker end, which should be boned. Stuff the boned piece and tie into good shape. Roast in a hot oven, allowing about 10 minutes for each pound if the meat is desired rare, 15 if desired well cooked.

Dressing for Roast Mutton

1 pint stale bread crumbs.
½ cup cracker crumbs.
½ teaspoon sage.
2 tablespoons butter.
1 teaspoon sweet marjoram.
Salt and pepper.
Few drops onion juice.

Soak the bread in cold water. Press out nearly all the water, and add the other ingredients.

Roast Ribs of Mutton With Apples

After wiping the meat, spread over the surface one finely chopped clove of garlic, one chopped onion, one-half teaspoon each of powdered thyme and marjoram, and one teaspoon of salt. Place on a rack and roast in a moderate oven from one and one-half to two hours, basting frequently. Place potatoes and sour apples around the roast, the former one hour before serving and the latter one-half hour. The apples will prove a palatable accompaniment to the roast and will impart their flavor to the gravy.

Roast Mutton With Bananas

Peel the bananas and bake them for 30 minutes under the mutton. Tart fruit relishes, such as spiced currants or those given below, may be served with the bananas.

Fruit Relishes With Roast Mutton

1 cup prunes cut into small pieces.
1½ cups water.
3 tablespoons sugar.
½ teaspoon ground cinnamon.
2 tablespoons currant jelly.
Juice of ½ orange.

Boil together until the prunes are soft.

For the prunes in this recipe raisins or a mixture of equal parts of raisins and prunes may be substituted. One-fourth cup of butter is sometimes added.

These fruit relishes may be served also with sliced cold lamb or mutton and are very palatable.

Roast Mutton With Turnips

Turnips are frequently cooked under roast mutton. They are sometimes stuffed. To prepare in this way, first parboil the turnips and then scoop out a portion of each by means of a spoon and fill the cavity with bread which has been soaked in cream or in milk to which a little melted butter has been added.

Baked Breast of Mutton

Sew up a breast of mutton in a very thin cloth, put it into a stewpan, pour over it enough cold salted water to nearly cover it, and let it simmer, allowing 10 minutes to each pound. Then take it out of the saucepan and out of the cloth put it in a baking dish, rub it over with mutton drippings, butter, or savory fat, sprinkle some flour over it, and bake for one-half hour in a hot oven, basting frequently with its own broth. Five minutes before taking it out of the oven strew fine dry bread crumbs thickly over it, put little bits of butter here and there, and let it brown. Serve with a brown sauce made from the broth in which the meat was cooked.

Mutton and Potato Pie

1 pound mutton from the shoulder.
1 onion.
½ cup flour.
1 carrot.
6 medium-sized potatoes.
1 teaspoon baking powder.
1 tablespoon butter.
Salt.

Cook the onions, carrots, and meat together in water enough to cover. Boil the potatoes separately. Reserve enough of the potatoes to make a cup of mashed potatoes. Cut the remaining potatoes and the other vegetables and meat into small pieces, and place in a baking dish. Cover with some of the broth thickened with the flour. Mash the remaining potatoes. Add butter and salt. Mix this with the flour which has been thoroughly sifted with the baking powder. Spread this mixture over the ingredients in the baking dish, and bake in a hot oven until the crust is brown.

BROILING

Broiling is a process closely akin to roasting, as the term was formerly used. It is performed over a clear fire, and relatively thin pieces of meat only are suitable for the purpose. The searing of the surface, which can be accomplished very quickly, is usually sufficient for the retention of the juices. In the case of meats having little fat, however, butter or other fat should be rubbed over the surface before the cooking is begun.

Chops from the loin or the rib, cutlets from the leg, or thick pieces cut from rare boiled or roasted mutton are suitable for broiling. When it is not convenient to broil, much the same results can be secured by pan broiling, i. e., cooking in a hot pan lightly greased.

Broiled Loin Chops

Remove superfluous fat and roll the flank about the tenderloin, fastening it with skewers. Place on a broiler greased with some of the mutton fat. Cook from six to eight minutes, turning frequently during the first part of the time. A sauce of butter to which a little lemon juice and chopped parsley have been added is sometimes rubbed over the chops, or since the chops themselves contain much fat, lemon juice and parsley only may be used, or the chops may be served on thin slices of lemon. Onion sauce is by some people considered a great delicacy for serving with broiled chops.

Sauces for Broiled Loin Chops

Parsley and Butter Sauce

¼ cup butter.
½ teaspoon salt.
⅛ teaspoon pepper.
½ tablespoon finely chopped parsley.
¾ tablespoon lemon juice.

Cream the butter, add the salt, pepper, and parsley, and then the lemon juice very slowly.

Onion Sauce

6 large white onions.
¼ cup butter.
1 tablespoon flour.
1 teaspoon sugar.
½ cup cream.
Salt.

Cut the onions into two or three pieces each, and cook them for 10 minutes in boiling salt water. Strain them and cook in a covered saucepan with the butter for about three-fourths hour or until they are very tender. Press through a puree sieve and reheat. Sprinkle the flour over them, stirring it in thoroughly, and add the seasonings. Bring to the boiling point and heat long enough to cook the flour thoroughly.

Tomato Sauce

2 tablespoons butter.
2 tablespoons flour.
Stewed or fresh tomato enough to make 1 cup when well boiled down.
1 stalk celery.
1 sliced onion.
Few cloves.
Salt and pepper.

Cook the tomatoes with the seasonings. Cook the flour thoroughly in the butter, strain the tomatoes, and add to them the butter and flour. Cook all together until smooth, stirring constantly.

Montana Steak

1 pound lean mutton free from bone.
1 egg.
½ cup milk.
1 teaspoon salt.
⅛ teaspoon pepper.
Few drops onion juice.

Chop the meat finely, add the other ingredients, form into small cakes, and either broil or fry them. While this dish is more delicate if the egg and milk are used, it can be made without them. In this case it resembles very closely Hamburg steak as it is ordinarily prepared from beef. It may be made with or without onion.

FRYING

Frying in deep fat is a method of cooking meat in which it is subjected to high temperature, and which imparts a distinctive flavor to the meat. It is a common custom to dip meat, fish, etc., cooked by this method, in egg and fine crumbs before immersing in the hot fat.

Fried Crumbed Mutton

If thin pieces of mutton, either raw or cooked, are dipped in flour, then in egg, and then in crumbs and fried in deep fat, they lose less moisture than if broiled. This method is especially suitable or rib chops, thin loin chops, or small pieces cut from rare cooked meat. Thick chops would hardly be cooked through by this process.

Fried Rib Chops

Wipe the chops and salt them on both sides, dip them in flour, and then in a mixture of egg and water in the proportion of one egg to two tablespoons of water and finally in fine cracker crumbs. Fry in deep fat at a temperature suitable for foods that have not been already cooked, which is about 350 degrees Fahrenheit. In fat of this temperature a small piece of bread from the center of the loaf will become a delicate brown in one minute.

Chops prepared in this way are often served around a mound of mashed potatoes. This has the advantage of keeping the chops hot if the precaution has been taken to reheat the potatoes after they have been mashed. A depression may be made in the mound of potatoes for tomato sauce, which is a good accompaniment for this dish. Broiled or fried chops are sometimes served around mounds of peas, young carrots, turnips, fried green peppers, or a puree of beans.

To prepare the carrots for this purpose, boil them in water, pour off the water, and add a little butter, a very little sugar, and chopped parsley. Reheat.

To prepare green sweet peppers, which are an exceptionally good accompaniment for mutton, remove all the seeds, cut into thin slices, and cook in butter and a little water. Allow the water to evaporate after the peppers have become tender and cook them in the fat until they begin to brown, but not long enough to blacken them.

Another dish which is often served with mutton chops or roast mutton is a puree of navy beans.

Puree of Navy Beans to Accompany Mutton Chops and Roast

1 pint beans.
1 onion.
1 carrot.
1 sprig parsley.
Pepper.
¼ pound salt pork or
2 tablespoons mutton drippings.
2 cloves.
½ teaspoon salt.
1 quart water.
1 tablespoon butter.

Soak the beans over night, drain, and add the other ingredients with the exception of the butter. Boil for 30 minutes and cook in a moderate oven for one hour. Remove the onions, carrot, and parsley and press through a sieve. Add butter and salt (if necessary) and reheat. Similar purees may be made from red kidney beans, split peas, and lentils.

WARMED-OVER MUTTON

Since the successful recooking of mutton usually consists in utilizing well what happens to be on hand, both in the way of meat and also of vegetables or

other accompaniments, it is difficult to give any definite recipes. In many cases the preparation of a dish involves simply the reheating of pieces of the cold meat in a gravy, and for this reason the principles of the making of gravies should be kept in mind in this connection. The proportions for a sauce of suitable thickness are two level tablespoons of fat and two of flour to each cup of liquid. The fat may be butter, drippings, or savory fat, and the liquid may be water, stock, milk, tomato juice, or a combination of two or more of these. Browning the flour in the fat is an easy way of securing variety. If this is done the thickening power of the flour is reduced and the amount used should be three instead of two tablespoons to one cup of liquid.

The following, which is capable of a large number of variations secured by using different fats, liquids, and seasonings, is a good sauce in which to reheat mutton.

Sauce for Warmed-Over Mutton

1½ cups white stock.
1 slice onion.
1 slice carrot.
1 sprig parsley.
2 peppercorns.
¼ cup butter.
¼ cup flour.
1 cup scalded milk.
½ teaspoon salt.
⅛ teaspoon pepper.

Cook the stock 20 minutes with onion, carrot, bay leaf, parsley, and peppercorn, and strain. There should be one cup. Melt the butter, add the flour, and gradually the hot stock and milk. Season with salt and pepper.

Mutton In Gravy

Cold mutton reheated in gravy or sauce is served with rice, on toast, on baking-powder biscuits, with a pastry or biscuit crust, with a crust of mashed potatoes, or with a crust consisting of mashed potatoes and mashed turnips in proportion of 2 to 1.

Cutlets of Cold Mutton

From a leg of mutton, which has been cooked rare, cut pieces about the size of an ordinary loin chop. These may be fried in a little fat, or egged, crumbed, and fried in deep fat, or they may be brushed over with fat and broiled. The result is like meat cooked for the first time rather than like the ordinary warmed-over meat. Cutlets thus prepared may be served with any of the sauces suggested for serving with chops.

Mutton and Tomato Pie

An excellent way to use cold mutton is to bake it with tomatoes, using alternate layers of tomatoes and meat. A tomato sauce may be used or the following method may be employed: Place in a baking dish a layer of fresh tomatoes or of cooked tomatoes which have been either drained or reduced in volume by boiling. Add a layer of meat, dredge with flour, salt, and pepper, and add small bits of butter until the materials are used, arranging to have a layer of tomatoes on top. Cover this with a layer of buttered bread crumbs or cracker crumbs and bake until the crumbs are brown. In following this method use tomato, butter, and flour in the correct proportions for tomato sauce, i. e., two level tablespoons each of butter and flour for each cup of tomatoes.

Green Peppers Stuffed With Mutton

Cut green peppers in two lengthwise and remove all the seeds. Fill with a mixture of equal parts of cold mutton and boiled rice well seasoned and moistened with a little stock or water. Bake until the peppers are tender.

Mutton Croquettes

Like other meats, mutton may be used for croquettes. A general rule for making croquettes is to combine two cups of finely chopped cooked meat (or

the same amount of a mixture of meat, rice, and potatoes, or other vegetables) with one cup of thick sauce. The sauce for this purpose is made by heating one-third cup of flour, or one-fourth cup of cornstarch, in three tablespoons of fat, and adding a cup of liquid which may be stock, water, milk, tomato juice, or a mixture. The amounts given above are those generally used, but the proportion of sauce to meat varies under different circumstances, as some substances absorb more of this sauce than others do. It is a common practice, though by no means necessary, to add the yolk of a raw egg. After the mixture of meat and sauce is cooled it is formed into rolls of uniform size which should be dipped first in flour, then in a mixture of two tablespoons of water and one egg, and finally in fine cracker crumbs. The temperature for frying croquettes is that for all foods which have already been cooked (about 400 degrees Fahrenheit). Fat (oil, lard, drippings, etc.) at that temperature will brown a piece of bread taken from the center of a loaf in 40 seconds.

Mutton and Caper Croquettes

3 tablespoons savory fat.
⅓ cup flour.
1 cup mutton stock or milk.
2 cups finely chopped cold mutton.
1 tablespoon finely chopped capers.
Salt.

Make a sauce out of the fat, flour and liquid, mix with the other ingredients, and follow the rules given above for making croquettes.

Mutton and Rice Croquettes

In the above recipe, substitute one cup of cold boiled rice for one of the cups of mutton.

Mutton and Potato Croquettes

In the recipe for mutton croquettes, substitute two-thirds of a cup of cold boiled potatoes cut into small pieces for one of the cups of mutton.

Steamed Mutton and Rice

4 cups cooked or
1 cup raw rice.
2 cups cooked mutton cut into small pieces.
1 teaspoon salt.
¼ teaspoon pepper.
Few drops onion juice.
1 tablespoon chopped parsley
¼ cup bread crumbs.
1 egg.
Stock or water.

Grease a mold or a bowl of about 1½ quarts capacity and line with cooked rice. Heat the meat with the other ingredients, using enough stock to make a mixture that is moist, but will hold its shape. Pack the meat in the center of the mold and cover with the remaining rice, grease the cover of the mold (if a bowl is used, a plate will serve for a cover), steam or cook in water enough to partly cover the mold until the contents are thoroughly heated through. Turn it on a hot platter and serve with tomato sauce.

The above recipe, it will be noted, suggests the use of bread crumbs instead of flour for thickening, which is often a way of saving bread which might otherwise be wasted, and which is also one way of securing variety, as a different texture results than when flour is used.

Mock Venison

Cut cold mutton into thin slices and reheat in a sauce made in the following way:

2 tablespoons butter.
2 tablespoons flour.
1 cup water or stock.
¼ cup red currant jelly.
1 tablespoon catsup or other meat sauce.
Salt.

Make a brown sauce out of the butter, flour, and water or stock. Add the jelly and other flavorings.

Turkish Stuffed Tomatoes

In Turkey a number of dishes are prepared from mutton which are interesting from the point of view of the food customs of another country, and also palatable. The recipes here given have been modified somewhat to accord with our usual habits of cookery. One of them involves the use of broken rice, which can easily be prepared by the use of an ordinary meat grinder. The following recipe for stuffed tomatoes is little different from many used in this country:

Two tablespoons cooked rice, one-half pound raw mutton, two onions. Pass the materials through a meat grinder; season with salt, pepper, and chopped parsley; fry in a pan for 10 minutes, stirring constantly. Wash one dozen smooth round tomatoes, cut a thin slice from the stem end, leaving a little of the skin for a hinge, remove the seeds and pulp, and fill with the meat mixture. Bake in a pan for 20 minutes, lift out with a broad knife and serve hot.

Mutton and Eggplant Pie

Eggplant pie is a simple and well-seasoned dish made from a vegetable which has no marked flavor. It is made by cooking together in a baking pan alternate layers of eggplant and of chopped mutton fried in its own fat. Sometimes a little tomato juice is added or a few sliced tomatoes. It should be baked until well browned.

Mutton and Rice Rolls

A characteristic Turkish dish is "sarma" or rolls made of meat and broken rice wrapped in grape leaves and then boiled. An acceptable substitute for this dish and one more in accord with common methods may be made by cooking chopped mutton and rice in a baking dish lined with slices of tart apple, which gives an even more pronounced tart flavor than the grape leaves, or the following recipe may be used:

Mutton and Cabbage-Leaf Rolls

1 cup raw chopped mutton.
2 tablespoons fat.
⅓ cup raw rice.
2 teaspoons salt.
¼ teaspoon pepper.
1 head cabbage.
1 lemon.

Throw cabbage leaves of suitable size into boiling water and let them stand until they are wilted. Mix the remaining ingredients (with the exception of the lemon) and form into rolls, each containing about 1 tablespoon. Wrap each roll in a cabbage leaf, removing the thicker part of the stem of the leaf if necessary in order to roll it well. Pack these rolls closely into the baking dish and cover with water or stock. Bake one-half hour. Just before serving squeeze the juice of a lemon over them.

Or serve with the following:

Sour Butter Sauce for Mutton and Cabbage-Leaf Rolls

1 tablespoon chopped pickle.
1 tablespoon chopped parsley.
2 tablespoons mutton fat (savory or 2 tablespoons butter, plain rendered).
3 tablespoons vinegar (spiced vinegar from pickles preferable).
Salt and red pepper to taste.

Beat the butter and mutton fat with a spoon until smooth, then beat in the vinegar until the sauce looks light colored and the vinegar has all been taken up. Add 1 tablespoon of finely chopped pickles and 1 tablespoon of finely chopped parsley.

MUTTON WITH FRUITS

In the Orient it is a common custom to cook mutton with various fruits. Quinces, pears, apricots, and prunes, either fresh or dried, are used for this purpose. The fruit and meat should be cooked separately and reheated in combination. Some recipes direct that the meat be browned before cooking in water, others that it simply be stewed in water. Of the many recipes that might be given the following, based on oriental recipes, are selected:

Mutton With Quinces

For this recipe use any cut of mutton suitable for stewing and twice its weight of raw quinces. Cut the meat into small pieces and brown them either in mutton fat or butter. Cover with boiling water, add salt, and cook slowly until tender. Pare and quarter the quinces and cook them in a small amount of water until tender. Combine the meat with the fruit and cook slowly for 10 or 15 minutes. Serve with rice. Variety may be obtained by making a brown gravy with the fat in which the meat is fried and cooking the meat in that.

Mutton With Sour Apples

In the above recipe sour apples may be substituted for quinces.

Mutton Baked With Apples and Onions

2 pounds mutton cutlets from neck.
Salt.
1 onion.
4 medium-sized apples.

Prepare the meat by removing the bone and superfluous fat. Season with salt and lay in a baking dish. Cover the meat with finely sliced sour apples and finely chopped onions. Bake in a moderate oven until the meat is tender, which will be about one hour.

CORNED MUTTON AND ITS USES

For convenience, the amounts are changed so as to be suitable for the quantity of meat which would usually be used in the home. If larger quantities are corned, the quantities should be increased proportionately. The shoulder is the cut most frequently corned. The leg is delicious corned, but it is too expensive to be used in this way except for the purpose of preserving it.

10 pounds mutton.
1½ cups salt.
½ tablespoon baking soda.
1 tablespoon saltpeter.
¾ cup brown sugar.

Rub the salt thoroughly into the meat, covering every portion, and allow the meat to stand with the salt on it for 24 hours; then pour over it the other ingredients dissolved in a small amount of lukewarm water. Add water enough to cover the meat, and allow the meat to stand in the brine for at least three or four days. Meat thus corned will keep in good condition for a long time. Since mutton absorbs salt more readily than beef, special care should be taken to avoid using too much of it.

Corned mutton may be used in all the ways in which corned beef is used. The broth in which it is boiled makes good soup when seasoned with onion and turnip or other vegetables.

MUTTON SAUSAGES

Sausage can be made from mutton mixed with pork in much the same way as beef is used for similar purposes. A general formula would be: Mutton, 2 parts; lean fresh pork, 1 part; and fat, pork, 1 part; with salt and seasoning to suit the taste. Such sausage can be made into cakes and cooked at once or may be packed in skins or bags in the usual way. Homemade sausage is very commonly kept frozen. When this is not possible, it is often convenient to make small quantities for immediate use.

Mutton Sausage No. 1

1 pound mutton free from bone.
½ pound fat fresh pork.
⅛ teaspoon black pepper.
½ teaspoon salt.
¼ teaspoon each, marjoram, thyme, and sage.

Put the meat through a sausage or meat grinder, and mix thoroughly with the other ingredients. Pack in a bag about 2½ inches in diameter and keep in a very cool place. Cut into slices and fry. If it is to be used at once packing in a bag is not necessary; instead the chopped and seasoned meat may be made into cakes.

Mutton Sausage No. 2

½ pound mutton free from bone.
½ pound veal.
½ pound salt pork.
¼ teaspoon salt.
¼ teaspoon each, marjoram, thyme, and sage.
⅛ teaspoon black pepper.

In preparing the sausage, follow the directions for Mutton Sausage No. 1.

Boost Your Own Product

Every producer should boost his business and kill a few lambs each year, advertise the fact among his neighbors, and get them to eating and using his product, by giving them recipes and showing them how to prepare this delicious food, so they will be asking him or the butcher for it. Think of it! A man said to me the other day: "I have been feeding and handling sheep for many years, and have never tasted mutton or lamb." Should this man complain about the lack of demand for his product? If the reader does not develop an appetite in reading these splendid recipes over once, he should repeat the dose as often as necessary.

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